

## ARCHITECTURE (COURSE 4)

### Architecture Design

#### 4.021 Design Studio: How to Design

Prereq: None

U (Fall, Spring)

3-3-6 units. HASS-A

Credit cannot also be received for 4.02A

Introduces fundamental design principles as a way to demystify design and provide a basic introduction to all aspects of the process. Stimulates creativity, abstract thinking, representation, iteration, and design development. Equips students with skills to have more effective communication with designers, and develops their ability to apply the foundations of design to any discipline. Limited to 25; preference to Course 4 and 4B majors and Design and Architecture minors, and first- and second-year students.

*Consult C. Norman*

#### 4.022 Introduction to Architectural Design Techniques

Prereq: 4.02A or 4.021

U (Spring)

3-3-6 units

Introduces the tools, techniques, and technologies of design across a range of projects in a studio environment. Explores concepts related to form, function, materials, tools, and physical environments through project-based exercises. Develops familiarity with design process, critical observation, and the translation of design concepts into digital and physical reality. Utilizing traditional and contemporary techniques and tools, faculty across various design disciplines expose students to a unique cross-section of inquiry. Limited to 25; preference to Course 4 majors, Architecture minors, and first- and second-year students.

*Consult C. Norman*

#### 4.023 Architecture Design Studio I

Prereq: 4.022

U (Fall)

0-12-12 units

Provides instruction in architectural design and project development within design constraints including architectural program and site. Students engage the design process through various 2-dimensional and 3-dimensional media. Working directly with representational and model making techniques, students gain experience in the conceptual, formal, spatial and material aspects of architecture. Instruction and practice in oral and written communication provided. Preference to Course 4 majors and minors.

*Consult C. Norman*

#### 4.024 Architecture Design Studio II

Prereq: 4.023, 4.401, and 4.500

U (Spring)

0-12-12 units

Provides instruction in architectural design and project development with an emphasis on social, cultural, or civic programs. Builds on foundational design skills with more complex constraints and contexts. Integrates aspects of architectural theory, building technology, and computation into the design process. Preference to Course 4 majors.

*Consult C. Norman*

#### 4.02A Design Studio: How to Design Intensive

Prereq: None

U (IAP)

2-5-2 units. HASS-A

Credit cannot also be received for 4.021

Introduces fundamental design principles as a way to demystify design and provide a basic introduction to all aspects of the process. Stimulates creativity, abstract thinking, representation, iteration, and design development. Equips students with skills to have more effective communication with designers, and develops their ability to apply the foundations of design to any discipline. Limited to 30; preference to Course 4 and 4B majors and Design and Architecture minors, and first- and second-year students.

*Consult C. Norman*

#### 4.031 Design Studio: Objects and Interaction

Prereq: None

U (Fall)

3-3-6 units

Overview of design as the giving of form, order, and interactivity to the objects that define our daily life. Follows the path from project to interactive product. Covers the overall design process, preparing students for work in a hands-on studio learning environment. Emphasizes design development and constraints. Topics include the analysis of objects; interaction design and user experience; design methodologies, current dialogues in design; economies of scale vs. means; and the role of technology in design. Provides a foundation in prototyping skills such as carpentry, casting, digital fabrication, electronics, and coding. Limited to 15; preference to Course 4-B majors and Design Minors.

*Consult M. Coelho*

**4.032 Design Studio: Information Design and Visualization**

Subject meets with 4.033

Prereq: None

U (Spring)

3-3-6 units

Provides an introduction to working with information, data and visualization in a hands-on studio learning environment. Studies the history and theory of information, followed by a series of projects in which students apply the ideas directly. Progresses through basic data analysis, visual design and presentation, and more sophisticated interaction techniques. Topics include storytelling and narrative, choosing representations, understanding audiences, and the role of designers working with data. Graduate students are expected to complete additional assignments. Preference to 4-B majors and Design minors.

*Consult B. Fry*

**4.033 Design Studio: Information Design and Visualization**

Subject meets with 4.032

Prereq: None

G (Spring)

Units arranged

Provides an introduction to working with information, data and visualization in a hands-on studio learning environment. Studies the history and theory of information, followed by a series of projects in which students apply the ideas directly. Progresses through basic data analysis, visual design and presentation, and more sophisticated interaction techniques. Topics include storytelling and narrative, choosing representations, understanding audiences, and the role of designers working with data. Graduate students are expected to complete additional assignments.

*Consult B. Fry*

**4.041 Design Studio: Advanced Product Design**

Prereq: 4.031 or permission of instructor

U (Spring)

3-3-6 units

Focuses on producing a small series of manufactured products. Students develop products that address specific user needs, propose novel design concepts, iteratively prototype, test functionality, and ultimately exhibit their work in a retail context. Stemming from new research and technological developments around MIT, students try to imagine the future products that emerge from new materials and machine intelligence. Provides an in-depth exploration of the design and manufacturing of products, through narrative, form, function, fabrication, and their relationship to customers. Enrollment limited to 15; preference to Course 4B majors and Design Minors.

*Consult S. Tibbits*

**4.043 Design Studio: Interaction Intelligence**

Subject meets with 4.044

Prereq: 4.031 or permission of instructor

U (Spring)

3-3-6 units

Overview of core principles and techniques for the design of interaction, behavior, and intelligence across objects and spaces. In a studio environment, students develop low and high-fidelity interactive prototypes that can be deployed and experienced by real users. Lectures cover the history and principles of human-computer interaction, behavior prototyping, physical and graphical user interfaces, machine intelligence, neural networks, and large language models. Provides a foundation in technical skills, such as physical prototyping, coding, and electronics, as well as how to collect data, train, and deploy their own neural network models. Students complete a series of small interaction exercises and a portfolio-level final project. Students taking graduate version complete additional assignments. Preference to 4B majors and Design minors.

*M. Coelho*

**4.044 Design Studio: Interaction Intelligence**

Subject meets with 4.043

Prereq: Permission of instructor

G (Spring)

Units arranged

Overview of core principles and techniques for the design of interaction, behavior, and intelligence across objects and spaces. In a studio environment, students develop low and high-fidelity interactive prototypes that can be deployed and experienced by real users. Lectures cover the history and principles of human-computer interaction, behavior prototyping, physical and graphical user interfaces, machine intelligence, neural networks, and large language models. Provides a foundation in technical skills, such as physical prototyping, coding, and electronics, as well as how to collect data, train, and deploy their own neural network models. Students complete a series of small interaction exercises and a portfolio-level final project. Students taking graduate version complete additional assignments. Preference to 4B majors and Design minors.

*Consult M. Coelho*

**4.051 The Human Factor in Innovation and Design Strategy**

Prereq: None

U (Spring)

Not offered regularly; consult department

2-2-8 units

Focuses on understanding the emerging field of human-centered design and its approach to real-world design challenges. Through group working sessions, design reviews, and presentations by leading design practitioners, thinkers, and business leaders, the class explores core methodologies on how design brings value to human experiences and to the contemporary marketplace. Limited to 20; preference to 4B majors and Design minors.

*Consult S. Tibbits***4.053 Visual Communication Fundamentals**

Prereq: None

U (Fall)

3-3-6 units. HASS-A

Provides an introduction to visual communication, emphasizing the development of a visual and verbal vocabulary. Presents the fundamentals of line, shape, color, composition, visual hierarchy, word/image relationships and typography as building blocks for communicating with clarity, emotion, and meaning. Students develop their ability to analyze, discuss and critique their work and the work of the designed world. Limited to 18; preference to Course 4-B majors and Design minors.

*Consult S. Tibbits***4.090 Practical Experience in Architecture for Undergraduates**

Prereq: Permission of instructor

U (IAP, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Practical experience through summer and January IAP internships secured by the student in the field of architecture, urbanism, digital design, art, or building technology. Before registering for this subject, students must have an offer from a company or organization and complete the Department of Architecture application signed by the advisor. Upon completion of the internship, students must submit an evaluation form available from the departmental academic office. Students are limited to a total of three approved experiences. Restricted to Course 4 undergraduate students.

*Consult P. Pettigrew***4.091 Independent Study in Design**

Prereq: None

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Staff***4.092 Independent Study in Design**

Prereq: None

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Staff***4.093 Independent Study in Design**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Staff***4.094 Independent Study in Design**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Staff*

#### 4.105 Cultures of Form

Prereq: Permission of instructor

G (Fall)

2-2-5 units

Introduction to cultures of form in architectural design, representation, and production, including material cultures, geometric discourse and analysis, Western and non-Western modes of perception and representation. Through a series of acts of forming and making, provides a primer and venue to rehearse skills such as 3D modeling and the reciprocity between representation and materialization. Exercises accompanied by lectures from practitioners, who each represent a highly articulated relationship between form and material in a body of design research or built work. Restricted to first-year MArch students.

*Consult J. Jih*

#### 4.109 Materials and Fabrication for Architecture

Prereq: Permission of instructor

G (IAP)

0-3-6 units

Provides the material system knowledge and fabrication process skills to successfully engage with all areas of the shop, from precision handwork to multi-axis computer numerically controlled (CNC) machining. Progresses through a series of basic exercises that introduce the material and workflow, concluding with more complex problems that explore opportunities and issues specific to architecture. Limited to 12; preference to first-year MArch students.

*Consult J. O'Brien*

#### 4.110 Design Across Scales and Disciplines

Subject meets with 4.111

Prereq: None

U (Spring)

2-2-8 units. HASS-A

Inspired by Charles and Ray Eames' canonical Powers of Ten, explores the relationship between science and engineering through the lens of design. Examines how transformations in science and technology have influenced design thinking and vice versa. Provides interdisciplinary skills and methods to represent, model, design and fabricate objects, machines, and systems using new computational and fabrication tools. Aims to develop methodologies for design research of interdisciplinary problems. Additional work required of students taking the graduate version. Enrollment limited; preference to Course 4-B majors and Course 4 minors.

*Consult N. de Monchaux*

#### 4.111 Design Across Scales and Disciplines

Subject meets with 4.110

Prereq: None

G (Spring)

2-2-8 units

Inspired by Charles and Ray Eames' canonical Powers of Ten, explores the relationship between science and engineering through the lens of design. Examines how transformations in science and technology have influenced design thinking and vice versa. Provides interdisciplinary skills and methods to represent, model, design and fabricate objects, machines, and systems using new computational and fabrication tools. Aims to develop methodologies for design research of interdisciplinary problems. Additional work required of students taking the graduate version.

*Consult N. de Monchaux*

#### 4.117 Creative Computation

Subject meets with 4.118

Prereq: Permission of instructor

G (Spring)

Units arranged

Dedicated to bridging the gap between the virtual and physical world, the subject embraces modes of computation that hold resonance with materials and methods that beg to be computed. Students engage in bi-weekly exercises to solve complex design problems. Each exercise is dedicated to a different computation approach (recursion, parametric, genetic algorithms, particle-spring systems, etc.) that is married to a physical challenge, thereby learning the advantages and disadvantages to each approach while verifying the results in physical and digitally fabricated prototypes. Through the tools of computation and fabrication, it empowers students to design as architects, engineers and craftspeople. Additional work required of student taking for graduate credit. Enrollment limited; preference to MArch students.

*Consult B. Clifford*

**4.118 Creative Computation**

Subject meets with 4.117

Prereq: 4.500 or permission of instructor

U (Spring)

3-0-9 units

Dedicated to bridging the gap between the virtual and physical world, the subject embraces modes of computation that hold resonance with materials and methods that beg to be computed. Students engage in bi-weekly exercises to solve complex design problems. Each exercise is dedicated to a different computation approach (recursion, parametric, genetic algorithms, particle-spring systems, etc.) that is married to a physical challenge, thereby learning the advantages and disadvantages to each approach while verifying the results in physical and digitally fabricated prototypes. Through the tools of computation and fabrication, it empowers students to design as architects, engineers and craftspeople. Additional work required of student taking for graduate credit. Enrollment limited; preference to 4-B majors and Design minors.  
*Consult B. Clifford*

**4.120 Furniture Making Workshop**

Prereq: Permission of instructor

G (Spring)

2-2-5 units

Provides instruction in designing and building a functional piece of furniture from an original design. Develops woodworking techniques from use of traditional hand tools to digital fabrication. Gives students the opportunity to practice design without using a building program or code. Surveys the history of furniture making. Additional work required of students taking for graduate credit. Limited to 12; preference to graduate Course 4 students.  
*C. Dewart*

**4.123 Architectural Assemblies**

Prereq: None

G (Spring)

2-2-5 units

Fosters a holistic understanding of the architectural-building cycle, enabling students to build upon the history of design and construction to make informed decisions towards developing innovative building systems. Includes an overview of materials, processing methods, and their formation into building systems across cultures. Looks at developing innovative architectural systems focusing on the building envelope. Seeks to adapt processes from the aerospace and automotive industries to investigate buildings as prefabricated design and engineering assemblies. Synthesizes knowledge in building design and construction systems, environmental and structural design, and geometric and computational approaches.  
*Consult W. O'Brien*

**4.125 Furniture Making Workshop**

Prereq: None

U (Fall)

Not offered regularly; consult department

2-2-5 units

Provides instruction in designing and building a functional piece of furniture from an original design. Develops woodworking techniques from use of traditional hand tools to digital fabrication. Gives students the opportunity to practice design without using a building program or code. Surveys the history of furniture making and includes site visits to local collections and artists/craftsmen. Additional work required of students taking for graduate credit. Limited to 12; preference to undergraduate Course 4 and 4B majors and Design and Architecture minors.  
*C. Dewart*

**4.130 Architectural Design Theory and Methodologies**

Prereq: None

G (Fall)

3-3-6 units

Can be repeated for credit.

Studies design as an interrogative technique to examine material sciences, media arts and technology, cultural studies, computation and emerging fabrication protocols. Provides in-depth, theoretical grounding to the notion of 'design' in architecture, and to the consideration of contemporary design methodologies, while encouraging speculation on emerging design thinking. Topical focus varies with instructor. May be repeated for credit with permission of department.  
*Consult A. Miljacki*

**4.140[[]] How to Make (Almost) Anything**

Same subject as 6.9020], MAS.863[[]]

Prereq: Permission of instructor

G (Fall)

3-9-6 units

See description under subject MAS.863[[]].

*N. Gershenfeld, J. DiFrancesco, J. Lavalley, G. Darcey*

#### 4.151 Architecture Design Core Studio I

Prereq: Permission of instructor

G (Fall)

0-12-9 units

Explores the foundations of design through a series of bracketed methods of production. These methods exercise topics such as form, space, organization, structure, circulation, use, tectonics, temporality, and experience. Students develop methods of representation that span from manual to virtual and from canonical to experimental. Each method is evaluated for what it offers and privileges, supplying a survey of approaches for design exercises to follow. First in a sequence of design subjects, which must be taken in order. Limited to first-year MArch students.

*Consult W. O'Brien*

#### 4.152 Architecture Design Core Studio II

Prereq: 4.151

G (Spring)

0-12-9 units

Builds on Core I skills and expands the constraints of the architectural problem to include issues of urban site logistics, cultural and programmatic material (inhabitation and human factors), and long span structures. Two related projects introduce a range of disciplinary issues, such as working with precedents, site, sectional and spatial proposition of the building, and the performance of the outer envelope. Emphasizes the clarity of intentions and the development of appropriate architectural and representational solutions. Limited to first-year MArch students.

*Consult W. O'Brien*

#### 4.153 Architecture Design Core Studio III

Prereq: 4.152

G (Fall)

0-12-9 units

Interdisciplinary approach to design through studio design problems that engage the domains of building technology, computation, and the cultural/historical geographies of energy. Uses different modalities of thought to examine architectural agendas for 'sustainability'; students position their work with respect to a broader understanding of the environment and its relationship to society and technology. Students develop a project with a comprehensive approach to programmatic organization, energy load considerations, building material assemblies, exterior envelope and structure systems. Limited to second-year MArch students.

*Consult W. O'Brien*

#### 4.154 Architecture Design Option Studio

Prereq: 4.153

G (Fall, Spring)

0-10-11 units

Can be repeated for credit.

Offers a broad range of advanced-level investigations in architectural design in various contexts, including international sites. Integrates theoretical and technological discourses into specific topics. Studio problems may include urbanism and city scale strategies, habitation and urban housing systems, architecture in landscapes, material investigations and new production technologies, programmatic and spatial complex building typologies, and research centered studies. Mandatory lottery process.

*Consult W. O'Brien*

#### 4.163[ ] Urban Design Studio

Same subject as 11.332[ ]

Prereq: Permission of instructor

G (Fall)

Units arranged

Can be repeated for credit.

The design of urban environments. Strategies for change in large areas of cities, to be developed over time, involving different actors. Fitting forms into natural, man-made, historical, and cultural contexts; enabling desirable activity patterns; conceptualizing built form; providing infrastructure and service systems; guiding the sensory character of development. Involves architecture and planning students in joint work; requires individual designs or design and planning guidelines.

*Consult R. Segal*

#### 4.173[ ] China Urban Design Studio

Same subject as 11.307[ ]

Prereq: Permission of instructor

G (Spring)

Not offered regularly; consult department

0-21-0 units

See description under subject 11.307[ ]. Limited to 10.

*B. Ryan*

**4.180 Design Workshop**

Prereq: Permission of instructor

G (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Subject in design inquiry taught in studio format treating selected issues of the built world in depth. The problem may be prototypical or a particular aspect of a whole project, but always interdisciplinary in nature.

*Consult Architecture Design Staff*

**4.181 Architectural Design Workshop**

Prereq: Permission of instructor

G (IAP, Spring)

Units arranged

Can be repeated for credit.

Addresses design inquiry in a studio format. In-depth consideration of selected issues of the built world. The problem may be prototypical or a particular aspect of a whole project, but is always interdisciplinary in nature.

*Consult Architecture Design Staff*

**4.182 Architectural Design Workshop**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Addresses design inquiry in a studio format. In-depth consideration of selected issues of the built world. The problem may be prototypical or a particular aspect of a whole project, but is always interdisciplinary in nature.

*Consult Architecture Design Staff*

**4.183-4.185 Architectural Design Workshop**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Addresses design inquiry in a studio format. In-depth consideration of selected issues of the built world. The problem may be prototypical or a particular aspect of a whole project, but is always interdisciplinary in nature.

*Consult Architecture Design Staff*

**4.189 Preparation for MArch Thesis**

Prereq: Permission of instructor

G (Fall, Spring, Summer)

3-1-5 units

Can be repeated for credit.

Preparatory research development leading to a well-conceived proposition for the MArch design thesis. Students formulate a cohesive thesis argument and critical project using supportive research and case studies through a variety of representational media, critical traditions, and architectural/artistic conventions. Group study in seminar and studio format, with periodic reviews supplemented by conference with faculty and a designated committee member for each individual thesis. Restricted to MArch students.

*Consult W. O'Brien*

**4.190 Practical Experience in Architecture**

Prereq: Permission of instructor

G (IAP, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Practical experience through summer and January IAP internships secured by the student in the field of architecture, urbanism, digital design, art, or building technology. Before registering for this subject, students must have an offer from the organization and complete the Department of Architecture application with their advisor's signature. Upon completion of the internship, students must submit an evaluation form available from the departmental academic office. Students are limited to a total of three approved experiences. Restricted to Course 4 graduate students.

*Consult P. Pettigrew*

**4.191 Independent Study in Architecture Design**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Design Staff*

**4.192 Independent Study in Architecture Design**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Design Staff*

**4.193 Independent Study in Architecture Design**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Design Staff*

**4.194 Independent Study in Architecture Design**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Design Staff*

**4.S00 Special Subject: Design**

Prereq: Permission of instructor

U (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Architecture Design Staff*

**4.S01 Special Subject: Design**

Prereq: Permission of instructor

U (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Architecture Design Staff*

**4.S02 Special Subject: Design**

Prereq: None

G (Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Design Staff*

**4.S03 Special Subject: Design**

Prereq: None

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Design Staff*

**4.S10 Special Subject: Architecture Design**

Prereq: None

U (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Design Staff*

**4.S11 Special Subject: Architecture Design**

Prereq: None

U (IAP, Spring)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Design Staff***4.S12 Special Subject: Architecture Design**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Architecture Design Staff***4.S13 Special Subject: Architecture Design**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Architecture Design Staff***4.S14 Special Subject: Architecture Design**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture + Urbanism Staff***4.S15 Special Subject: Design**

Prereq: None

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*B. Clifford***4.S16 Special Subject: Architecture Design (New)**

Prereq: None

G (Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in architecture design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff***Architecture Studies****4.210 Positions: Cultivating Critical Practice**

Prereq: None

G (Fall)

3-0-6 units

Through formal analysis and discussion of historical and theoretical texts, seminar produces a map of contemporary architectural practice. Examines six pairs of themes in terms of their recent history: city and global economy, urban plan and map of operations, program and performance, drawing and scripting, image and surface, and utopia and projection. Restricted to year-one MArch students.

*B. Clifford***4.211[J] The Once and Future City**

Same subject as 11.016[J]

Prereq: None

U (Spring)

Not offered regularly; consult department

3-0-9 units. HASS-H; CI-H

See description under subject 11.016[J]. Enrollment limited.

*A. Spirn*

**4.213[J] Ecological Urbanism Seminar**

Same subject as 11.308[J]  
Prereq: Permission of instructor  
G (Spring)  
3-0-9 units

See description under subject 11.308[J]. Enrollment limited.  
*A. Spirn*

**4.215[J] Sensing Place: Photography as Inquiry**

Same subject as 11.309[J]  
Prereq: None  
Acad Year 2025-2026: Not offered  
Acad Year 2026-2027: G (Fall)  
3-0-9 units

See description under subject 11.309[J]. Enrollment limited.  
*A. Spirn*

**4.217[J] Disaster Resilient Design**

Same subject as 11.315[J]  
Subject meets with 4.218  
Prereq: None  
G (Fall)  
Not offered regularly; consult department  
3-0-6 units

Seminar examines the linkages between natural hazards and environmental design. Engages theoretical debates about landscapes of risk, vulnerability, and resilience. Participants generate proposals for disaster resilience through combinations of retrofit, reconstruction, resettlement, commemorative, and anticipatory design. Methods include rapid bibliographic search, risk analysis, landscape synthesis, and comparative international methods. Projects vary and may focus on current crises or involve collaboration with the Aga Khan Development Network and other humanitarian organizations. Additional work required of students taking the graduate version. Limited to 15.  
*Consult M. Mazereeuw*

**4.218 Disaster Resilient Design**

Subject meets with 4.217[J], 11.315[J]  
Prereq: None  
U (Fall)  
Not offered regularly; consult department  
3-0-9 units

Seminar examines the linkages between natural hazards and environmental design. Engages theoretical debates about landscapes of risk, vulnerability, and resilience. Participants generate proposals for disaster resilience through combinations of retrofit, reconstruction, resettlement, commemorative, and anticipatory design. Methods include rapid bibliographic search, risk analysis, landscape synthesis, and comparative international methods. Projects vary and may focus on current crises or involve collaboration with the Aga Khan Development Network and other humanitarian organizations. Additional work required of students taking the graduate version. Limited to 15; preference to Course 4 majors and minors.  
*Consult M. Mazereeuw*

**4.221 Architecture Studies Colloquium**

Prereq: Permission of instructor  
G (Fall)  
2-0-1 units

Aims to create a discourse across the various SMArchS discipline groups that reflects current Institute-wide initiatives; introduce SMArchS students to the distinct perspective of the different SMArchS discipline groups; and provide a forum for debate and discussion in which the SMArchS cohort can explore, develop and share ideas. Engages with interdisciplinary thinking, research, and innovation that is characteristic of MIT's culture and can form a basis for their future work. Limited to first-year SMArchS students.  
*Consult S. Tibbits*

**4.222 Professional Practice**

Prereq: Permission of instructor  
G (Fall)  
3-0-3 units

Gives a critical orientation towards a career in architectural practice. Uses historical and current examples to illustrate the legal, ethical and management concepts underlying the practice of architecture. Emphasis on facilitating design excellence and strengthening connections between the profession and academia. Restricted to MArch students.  
*Consult W. O'Brien*

**4.227 Landscapes of Energy**

Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 3-0-9 units

Spatializes large technological systems of energy, analyzes existing and speculative energy visions, and imagines energy futures in relation to concerns of ecology, politics, and aesthetics. Identifies different scales of thinking about the territory of energy from that of environmental systems, to cities, regions, and global landscapes. Readings and students' research projects draw on critical geography, history of technology, environmental history to synthesize energy attributes within the design disciplines. Limited to 12.

*Consult R. Ghosn*

**4.228[J] Contemporary Urbanism Proseminar: Theory and Representation**

Same subject as 11.348[J]  
 Prereq: Permission of instructor  
 G (Fall)  
 Units arranged

Critical introduction to key contemporary positions in urbanism to the ends of researching, representing, and designing territories that respond to the challenges of the 21st century. Provides an overview of contemporary urban issues, situates them in relation to a genealogy of urban precedents, and constructs a theoretical framework that engages the allied fields of architecture, landscape architecture, political ecology, geography, territorial planning, and environmental humanities. Comprised of three sections, first section articulates a framework on the urban as both process and form, shifting the emphasis from city to territory. Second section engages a series of related urban debates, such as density/sprawl, growth/shrinkage, and codes/exception. Third section calls upon urban agency in the age of environment through the object of infrastructures of trash, water, oil, and food. Limited to 25.

*Consult R. Segal*

**4.229[J] Collectives: New Forms of Sharing**

Same subject as 11.228[J]  
 Prereq: Permission of instructor  
 G (Spring)  
 Not offered regularly; consult department  
 3-0-9 units

Considers ways in which collaborative approaches to living can reshape architecture and the city. Students investigate historic and present spatial models and platforms (digital and physical) of collaboration and sharing. Explores how economic, political and social transformations, such as co-ownership, community-based exchange, digital collectives, and self-organization, can lead to new programs, typologies, designs, and new relationships between user, designer, and developer. Limited to 15.

*Consult R. Segal*

**4.230 SIGUS Workshop**

Prereq: Permission of instructor  
 G (Spring)  
 Not offered regularly; consult department  
 Units arranged  
 Can be repeated for credit.

Interdisciplinary projects and interactive practices in urban settlement issues as investigated by MIT's SIGUS (Special Interest Group in Urban Settlements), with a focus on developing countries throughout the world. Participation by guest practitioners. Additional work required of students taking the graduate version.

*R. Goethert*

**4.231 SIGUS Workshop**

Prereq: Permission of instructor  
 U (Spring)  
 Not offered regularly; consult department  
 Units arranged  
 Can be repeated for credit.

Interdisciplinary projects and interactive practices in urban settlement issues as investigated by MIT's SIGUS (Special Interest Group in Urban Settlements), with a focus on developing countries throughout the world. Participation by guest practitioners. Additional work required of students taking the graduate version.

*R. Goethert*

**4.240[J] Urban Design Skills: Observing, Interpreting, and Representing the City**

Same subject as 11.328[J]

Prereq: None

G (Fall; first half of term)

4-2-2 units

See description under subject 11.328[J].

*E. Ben-Joseph, M. Ocampo*

**4.241[J] The Making of Cities**

Same subject as 11.330[J]

Prereq: 11.001[J], 11.301[J], or permission of instructor

G (Spring)

Units arranged

Examines the complex development of cities through history by tracing a diachronic accumulation of forms and spaces in specific cities, and showing how significant ideas were made manifest across distinct geographies and cultures. Emphasizes how economic, spiritual, political, geographic and technological forces have simultaneously shaped and, in turn, been influenced by the city.

*R. Segal*

**4.242[J] Walking the City**

Same subject as 11.240[J]

Prereq: None

G (Fall)

2-0-10 units

Can be repeated for credit.

See description under subject 11.240[J]. Limited to 12. Preference to Course 4 and 11 graduate students who have completed at least two semesters.

*G. Cadogan*

**4.244[J] Urban Design Seminar: Perspectives on Contemporary Practice**

Same subject as 11.333[J]

Prereq: None

G (Spring)

2-0-7 units

See description under subject 11.333[J].

*Staff*

**4.245[J] DesignX Entrepreneurship**

Same subject as 11.245[J]

Prereq: Permission of instructor

G (IAP)

4-0-2 units

See description under subject 11.245[J]. Registration limited to students accepted to the MITdesignX accelerator in the fall.

*S. Gronfeldt, D. Frenchman, G. Rosenzweig*

**4.246[J] DesignX Accelerator**

Same subject as 11.246[J]

Prereq: Permission of instructor

G (Spring)

2-4-6 units

See description under subject 11.246[J]. Registration limited to students accepted to the MITdesignX accelerator in the fall.

*S. Gronfeldt, D. Frenchman, G. Rosenzweig*

**4.247[J] Urban Design Ideals and Action**

Same subject as 11.337[J]

Prereq: None

G (Fall)

Not offered regularly; consult department

2-0-7 units

See description under subject 11.337[J].

*B. Ryan*

**4.248[J] Advanced Urban Design Skills: Observing, Interpreting, and Representing the City**

Same subject as 11.329[J]

Prereq: 11.328[J] or permission of instructor

G (Fall; second half of term)

4-2-4 units

See description under subject 11.329[J].

*E. Ben-Joseph, M. Ocampo*

**4.250[J] Introduction to Urban Design and Development**

Same subject as 11.001[J]

Prereq: None

U (Fall)

3-0-9 units. HASS-H

Examines the evolving structure of cities and the way that cities, suburbs, and metropolitan areas can be designed and developed. Surveys the ideas of a wide range of people who have addressed urban problems. Stresses the connection between values and design. Demonstrates how physical, social, political and economic forces interact to shape and reshape cities over time. Introduces links between urban design and urban science.

*L. Vale (fall); A. Sevtsuk (spring)*

**4.252[J] Introduction to Urban Design and Development**

Same subject as 11.301[J]  
 Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 3-0-9 units

Examines the physical and social structure of cities and ways they can be changed. Includes significant thinkers in urban form, 20th-century American city design, urban design and society, global urban design, and design of neighborhoods and streets. Core lectures are supplemented by student papers examining the relationship of contemporary projects to history and theory, and factors of high quality global urban design and development. Guest speakers present cases involving current projects or research illustrating scope and methods of urban design theory and practice. Intended for those seeking an introduction to fundamental knowledge of theory and praxis in city design and development.

*B. Ryan*

**4.253[J] Urban Design Politics**

Same subject as 11.302[J]  
 Prereq: Permission of instructor  
 G (Spring)  
 3-0-9 units

See description under subject 11.302[J].

*L. Vale*

**4.254[J] Real Estate Development Studio**

Same subject as 11.303[J]  
 Prereq: Permission of instructor  
 G (Spring)  
 6-0-12 units

See description under subject 11.303[J].

*T. Ng*

**4.255[J] Site and Environmental Systems Planning**

Same subject as 11.304[J]  
 Prereq: Permission of instructor  
 G (Spring)  
 6-0-9 units

See description under subject 11.304[J].

*E. Ben-Joseph, M. A. Ocampo*

**4.256[J] Revealing the City**

Same subject as 11.256[J]  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 2-0-10 units

See description under subject 11.256[J]. Limited to 12. Preference to Course 4 and 11 graduate students who have completed at least two semesters.

*G. Cadogan*

**4.264[J] Advanced Seminar in Landscape and Urbanism**

Same subject as 11.334[J]  
 Prereq: Permission of instructor  
 G (Spring)  
 Not offered regularly; consult department  
 3-0-9 units

See description under subject 11.334[J].

*A. Berger*

**4.275[J] Advanced Urbanism Colloquium**

Same subject as 11.912[J]  
 Prereq: Permission of instructor  
 G (Fall, Spring)  
 1-1-1 units  
 Can be repeated for credit.

Introduces critical theories and contemporary practices in the field of urbanism that challenge its paradigms and advance its future. Includes theoretical linkages between ideas about the cultures of urbanization, social and political processes of development, environmental tradeoffs of city making, and the potential of design disciplines to intervene to change the future of built forms. Events and lecture series co-organized by faculty and doctoral students further engage and inform research. Preference to doctoral students in the Advanced Urbanism concentration.

*Consult S. Williams*

**4.288 Preparation for SMArchS Thesis**

Prereq: Permission of instructor  
 G (Fall, Spring, Summer)  
 Units arranged [P/D/F]  
 Can be repeated for credit.

Students select thesis topic, define method of approach, and prepare thesis proposal for SMArchS degree. Faculty supervision on an individual or group basis. Intended for SMArchS program students prior to registration for 4.ThG.

*Consult Architecture Staff*

**4.291 Independent Study in Architecture Studies**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Studies Staff*

**4.292 Independent Study in Architecture Studies**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Studies Staff*

**4.293 Independent Study in Architecture Studies**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Studies Staff*

**4.294 Independent Study in Architecture Studies**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Architecture Studies Staff*

**4.299 Summer Research Topics**

Prereq: Permission of instructor

G (Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary summer work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Staff*

**4.S20 Special Subject: Architecture Studies**

Prereq: None

U (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff*

**4.S21 Special Subject: Architecture Studies**

Prereq: None

U (Fall)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff*

**4.S22 Special Subject: Architecture Studies**

Prereq: Permission of instructor

G (Fall, Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff*

**4.S23 Special Subject: Architecture Studies**

Prereq: Permission of instructor

G (Spring; first half of term)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*S. Kennedy*

**4.S24 Special Subject: Architecture Studies**

Prereq: Permission of instructor

G (Fall, IAP)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*S. Tibbits***4.S25 Special Subject: Urban Housing**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in urban housing that is not covered in the regular architecture curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*R. Goethert***4.S26 Special Subject: City Form**

Prereq: Permission of instructor

G (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in city form that is not covered in the regular architecture curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff***4.S27 Special Subject: Urban Design**

Prereq: Permission of instructor

G (Fall)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in urban design that is not covered in the regular Architecture curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*R. Ghosn***4.S28 Special Subject: Architecture Studies**

Prereq: None

G (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architecture studies that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Staff***Art, Culture and Technology****4.301 Introduction to Artistic Experimentation**

Prereq: None

U (Fall)

3-3-6 units. HASS-A

Introduces artistic practice and critical visual thinking through three studio-based projects using different scales and media, for instance, "Body Extension," "Shaping Time," "Public Making," and/or "Networked Cultures." Each project concludes with a final presentation and critique. Students explore sculptural, architectural, performative artistic methods; video and sound art; site interventions and strategies for artistic engagement in the public realm. Lectures, screenings, guest presentations, field trips, readings, and debates supplement studio practice. Also introduces students to the historic, cultural, and environmental forces affecting both the development of an artistic vision and the reception of a work of art. Lab fee required. Limited to 20.

*Consult A. Aksamija***4.302 Foundations in Art, Design, and Spatial Practices**

Prereq: 4.02A or 4.021

U (Spring)

3-3-6 units. HASS-A

Develops an introductory foundation in artistic practice and its critical analysis, and develops artistic approaches and methods by drawing analogies to architectural thinking, urbanism, and design practice. Covers how to communicate ideas and experiences on different scales and through two-dimensional, three-dimensional, and time-based media in new genres. Uses artistic methods that engage the public realm through spatial, sculptural, performative, and process-oriented practices. Instruction components include video screenings, guest lectures, visiting artist presentations, and field trips. Instruction and practice in written and oral communication provided. Lab fee required. Limited to 18; preference to Course 4 majors and minors.

*Consult A. Aksamija*

#### **4.307 Art, Architecture, and Urbanism in Dialogue**

Subject meets with 4.308

Prereq: 4.301, 4.302, or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

3-3-6 units. HASS-A

Initiates a dialogue between architecture, urbanism, and contemporary art by focusing on the work of practitioners who intertwine the three disciplines in a critical spatial practice. Investigates themes and works ranging from early modernist practices to the contemporary and research based. Lectures, screenings, readings, and discussions with guests and faculty contribute to the development of group and individual projects and their presentation. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.308 Art, Architecture, and Urbanism in Dialogue**

Subject meets with 4.307

Prereq: Permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

Units arranged

Initiates a dialogue between architecture, urbanism, and contemporary art by focusing on the work of practitioners who intertwine the three disciplines in a critical spatial practice. Investigates themes and works ranging from early modernist practices to the contemporary and research based. Lectures, screenings, readings, and discussions with guests and faculty contribute to the development of group and individual projects and their presentation. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.310 Introduction to Screen Printing**

Subject meets with 4.311

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

0-3-3 units

Exposes students to the technical skills needed for successful screen printing. Students produce single and multicolor prints on paper and fabric using a variety of methods. Covers an introduction to preparing and reclaiming screens, creating handmade and digital cut stencils, use of screen positives and photo emulsion, mono prints and editions, registration, and more. Lab fee required. Additional work required of students taking for graduate credit. Limited to 10 total for versions meeting together.

*Consult G. Yeager*

#### **4.311 Introduction to Screen Printing**

Subject meets with 4.310

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

0-3-6 units

Expose students to the technical skills needed for successful screen printing. Students produce single and multicolor prints on paper and fabric using a variety of methods. Covers an introduction to preparing and reclaiming screens, creating handmade and digital cut stencils, use of screen positives and photo emulsion, mono prints and editions, registration, and more. Lab fee required. Additional work required of students taking for graduate credit. Limited to 10 total for versions meeting together.

*Consult G. Yeager*

#### **4.314 Advanced Workshop in Artistic Practice and Transdisciplinary Research**

Subject meets with 4.315

Prereq: 4.301, 4.302, or permission of instructor

U (Fall)

3-3-6 units. HASS-A

Can be repeated for credit.

Examines artistic practice as a form of critical inquiry and knowledge production. Offers opportunity to develop art as a means for addressing the social, cultural, and ecological consequences of technology, to build bridges between industry and culture, and to challenge the boundaries between public and private, and human and non-human. Provides instruction in evaluating models of experimentation, individual research, and collaboration with other disciplines in the arts, culture, science, and technology. Supports the development of individual and collective artistic research projects. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.315 Advanced Workshop in Artistic Practice and Transdisciplinary Research**

Subject meets with 4.314  
 Prereq: Permission of instructor  
 G (Fall)  
 Units arranged  
 Can be repeated for credit.

Examines artistic practice as a form of critical inquiry and knowledge production. Offers opportunity to develop art as a means for addressing the social, cultural, and ecological consequences of technology, to build bridges between industry and culture, and to challenge the boundaries between public and private, and human and non-human. Provides instruction in evaluating models of experimentation, individual research, and collaboration with other disciplines in the arts, culture, science, and technology. Supports the development of individual and collective artistic research projects. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.316 Culture Fabric: Art, Fashion, Identity**

Subject meets with 4.317  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: U (Spring)  
 3-3-6 units  
 Can be repeated for credit.

Focuses on the concept of "fabric" both as a medium and as a framework to explore the complex cultural histories, meanings, and functions of clothing and wearable technologies. Guides students in an exploration of ways in which clothing signals one's belonging to a group and reflects the degree of one's conformity with established social or cultural norms as well as ways in which clothing and fashion may provide insights into broader cultural codes, societal politics, and processes of transformation. Additional work is required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.317 Culture Fabric: Art, Fashion, Identity**

Subject meets with 4.316  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 3-3-3 units  
 Can be repeated for credit.

Focuses on the concept of "fabric" both as a medium and as a framework to explore the complex cultural histories, meanings, and functions of clothing and wearable technologies. Guides students in an exploration of ways in which clothing signals one's belonging to a group and reflects the degree of one's conformity with established social or cultural norms as well as ways in which clothing and fashion may provide insights into broader cultural codes, societal politics, and processes of transformation. Additional work is required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.318 Toxic Textiles/Fashion Fables**

Subject meets with 4.319  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: U (Spring)  
 3-0-9 units  
 Can be repeated for credit.

Critiques the widespread phenomenon of fast fashion and considers the notion of "toxic textiles" to explore the cultural, social, political, economic, and environmental footprint of clothing. Examines the storytelling capacity of the textile medium as an artistic and critical response to the world's pressing concerns. Introduces experimentation with textile art and fashion design, informed case studies in contemporary art, decolonizing fashion, performative and wearable technologies, experimental preservation, and fabric upcycling. Students exhibit one studio-based final project at the end of the term. Sewing skills beneficial but not required. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.319 Toxic Textiles/Fashion Fables**

Subject meets with 4.318

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

3-0-9 units

Can be repeated for credit.

Critiques the widespread phenomenon of fast fashion and considers the notion of "toxic textiles" to explore the cultural, social, political, economic, and environmental footprint of clothing. Examines the storytelling capacity of the textile medium as an artistic and critical response to the world's pressing concerns. Introduces experimentation with textile art and fashion design, informed case studies in contemporary art, decolonizing fashion, performative and wearable technologies, experimental preservation, and fabric upcycling. Students exhibit one studio-based final project at the end of the term. Sewing skills beneficial but not required. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.320 Introduction to Sound Creations**

Subject meets with 4.321

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

3-3-6 units. HASS-A

Develops a critical awareness of how sound art as a field for artistic exploration is performed, produced, and distributed. Explores contemporary and historical practices that emerge outside of purely musical environments and investigates specific compositional developments of post-war modernity and electro-acoustic music, as well as non-musical disciplines related to the psychophysics of hearing and listening. Lectures, screenings, readings, and discussions with guests and faculty contribute to the development of group and individual projects. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.321 Introduction to Sound Creations**

Subject meets with 4.320

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

Units arranged

Develops a critical awareness of how sound art as a field for artistic exploration is performed, produced, and distributed. Explores contemporary and historical practices that emerge outside of purely musical environments and investigates specific compositional developments of post-war modernity and electro-acoustic music, as well as non-musical disciplines related to the psychophysics of hearing and listening. Lectures, screenings, readings, and discussions with guests and faculty contribute to the development of group and individual projects. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.322 Introduction to Three-Dimensional Art Work**

Subject meets with 4.323

Prereq: None

U (Spring)

3-3-6 units. HASS-A

Explores three-dimensional art work, including sculptures and installations, from design to model to finished piece. Addresses challenges associated with design and fabrication, process, context, and relationships between objects, the body, and physical or cultural environments. Lectures, screenings, field trips, readings, and debates supplement studio practice. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.323 Introduction to Three-Dimensional Art Work**

Subject meets with 4.322

Prereq: None

G (Spring)

Units arranged

Explores three-dimensional art work, including sculptures and installations, from design to model to finished piece. Addresses challenges associated with design and fabrication, process, context, and relationships between objects, the body, and physical or cultural environments. Lectures, screenings, field trips, readings, and debates supplement studio practice. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.324 Artist, Architect, Tinkerer, Engineer: How to Collaborate Across Disciplines**

Subject meets with 4.325

Prereq: None

U (Fall)

3-3-6 units

Can be repeated for credit.

Seminar connecting the arts and sciences by exploring methodological similarities and differences across the arts, architecture, engineering, and social sciences. Through targeted reading and exercises, each student develops a collaborative project that engages directly with another discipline. Projects are iterated over the course of the term. Readings, visitors, and lectures expose students to a wide range of practitioners across different fields. Students interrogate the underlying methodologies that unite and separate their disciplines. Presents best-practice models for cultivating collaboration through the use of case studies. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult J. Barry*

**4.325 Artist, Architect, Tinkerer, Engineer: How to Collaborate Across Disciplines**

Subject meets with 4.324

Prereq: None

G (Fall)

Units arranged

Can be repeated for credit.

Seminar connecting the arts and sciences by exploring methodological similarities and differences across the arts, architecture, engineering, and social sciences. Through targeted reading and exercises, each student develops a collaborative project that engages directly with another discipline. Projects are iterated over the course of the term. Readings, visitors, and lectures expose students to a wide range of practitioners across different fields. Students interrogate the underlying methodologies that unite and separate their disciplines. Presents best-practice models for cultivating collaboration through the use of case studies. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult J. Barry*

**4.328 Climate Visions**

Subject meets with 4.329

Prereq: None

U (Fall)

3-3-3 units. HASS-A

Can be repeated for credit.

Presents artistic intelligence and modes of creative production as ways to contribute to and critically engage with climate science. In conversation with local stakeholders, students develop hybrid projects of art and design that negotiate between pragmatics and fiction to envision solutions to the climate crisis. Case studies and class participation examine dialectics between aesthetics and scientific knowledge related to environmental care and repair. Includes prototyping and publishing spatial, digital, and material experimentations to generate new work individually and/or collaboratively by way of diverse media explorations. Visiting speakers and field trips accompany lectures, readings, class discussions, and presentations. Additional work required of students taking the graduate version. Lab fee required. Limited to 12.

*Consult G. Urbonas*

**4.329 Climate Visions**

Subject meets with 4.328

Prereq: None

G (Fall)

3-3-6 units

Can be repeated for credit.

Presents artistic intelligence and modes of creative production as ways to contribute to and critically engage with climate science. In conversation with local stakeholders, students develop hybrid projects of art and design that negotiate between pragmatics and fiction to envision solutions to the climate crisis. Case studies and class participation examine dialectics between aesthetics and scientific knowledge related to environmental care and repair. Includes prototyping and publishing spatial, digital, and material experimentations to generate new work individually and/or collaboratively by way of diverse media explorations. Visiting speakers and field trips accompany lectures, readings, class discussions, and presentations. Additional work required of students taking the graduate version. Lab fee required. Limited to 12.

*Consult G. Urbonas*

#### **4.330 Documentary Production**

Subject meets with 4.331

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

1-2-6 units

Presents the basics of capturing documentary footage and sounds in real world scenarios, while navigating the ethics of capturing "reality," depicting real people, and representing "truth." Investigates methodologies of editing for production: for film or alternative media such as interactive, web, installation, and location intervention. From Robert Flaherty (silent era) and John Grierson (British model) to Morin & Rouch (cinema verite) and George Stoney (community engagement) to Errol Morris (epistemological interview) and Adam Chris (journalistic essay), considers the history and context of documentary and the various ways people have attempted to represent the real world, including newer hybrid forms that mix fiction, nonfiction, and nonlinear interactive works. Students produce a documentary short on the subject and in the medium of their choice. Additional work required of graduate students. Lab fee required. Limited to 10 total for versions meeting together.

*Consult G. Dolan*

#### **4.331 Documentary Production**

Subject meets with 4.330

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

1-2-6 units

Presents the basics of capturing documentary footage and sounds in real world scenarios, while navigating the ethics of capturing "reality," depicting real people, and representing "truth." Investigates methodologies of editing for production: for film or alternative media such as interactive, web, installation, and location intervention. From Robert Flaherty (silent era) and John Grierson (British model) to Morin & Rouch (cinema verite) and George Stoney (community engagement) to Errol Morris (epistemological interview) and Adam Chris (journalistic essay), considers the history and context of documentary and the various ways people have attempted to represent the real world, including newer hybrid forms that mix fiction, nonfiction, and nonlinear interactive works. Students produce a documentary short on the subject and in the medium of their choice. Additional work required of graduate students. Lab fee required. Limited to 10 for total versions meeting together.

*Consult G. Dolan*

#### **4.332 Introduction to Interactive, Participatory, and Generative Art Making**

Subject meets with 4.333

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

0-3-6 units

Students create art projects that interact with participants and/or environment using a variety of code and hardware-based solutions including MAX/MSP/Jitter, a graphical object-based coding environment, and Arduino physical computing technologies. Students use sensors or generate data to control or interact with lights, speakers, video, audio, motors and much more. Final projects are presented in "n/tr.ACT," an interactive art show in the ACT Gallery. Lab fee required. Additional work required of students taking for graduate credit. Limited to 8 total for versions meeting together.  
*Consult G. Dolan*

#### **4.333 Introduction to Interactive, Participatory, and Generative Art Making**

Subject meets with 4.332

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

0-3-6 units

Students create art projects that interact with participants and/or environment using a variety of code and hardware-based solutions including MAX/MSP/Jitter, a graphical object-based coding environment, and Arduino physical computing technologies. Students use sensors or generate data to control or interact with lights, speakers, video, audio, motors and much more. Final projects are presented in "n/tr.ACT," an interactive art show in the ACT Gallery. Lab fee required. Additional work required of students taking for graduate credit. Limited to 8 total for versions meeting together.  
*Consult G. Dolan*

**4.341 Introduction to Photography and Related Media**

Subject meets with 4.342

Prereq: None

U (Fall, Spring)

3-3-6 units. HASS-A

Introduces history and contemporary practices in artistic photography through projects, lectures, artist visits, group discussions, readings, and field trips. Fosters visual literacy and aesthetic appreciation of photography/digital imaging, as well as critical awareness of how images in our culture are produced and constructed. Provides instruction in the fundamentals of different camera formats, film exposure and development, lighting, black and white darkroom printing, and digital imaging. Assignments allow for incorporation of a range of traditional and experimental techniques, development of technical skills, and personal exploration.

Throughout the term, present and discuss projects in a critical forum. Additional work required of students taking the graduate version.

Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.342 Introduction to Photography and Related Media**

Subject meets with 4.341

Prereq: Permission of instructor

G (Spring)

Units arranged

Introduces history and contemporary practices in artistic photography through projects, lectures, artist visits, group discussions, readings, and field trips. Fosters visual literacy and aesthetic appreciation of photography/digital imaging, as well as critical awareness of how images in our culture are produced and constructed. Provides instruction in the fundamentals of different camera formats, film exposure and development, lighting, black and white darkroom printing, and digital imaging. Assignments allow for incorporation of a range of traditional and experimental techniques, development of technical skills, and personal exploration.

Throughout the term, present and discuss projects in a critical forum. Additional work required of students taking the graduate version.

Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.344 Advanced Photography and Related Media**

Subject meets with 4.345

Prereq: 4.341 or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

3-3-6 units. HASS-A

Fosters critical awareness of how images in our culture are produced and constructed. Covers a range of experimental techniques and camera formats, advanced traditional and experimental black-and-white darkroom printing, and all aspects of digital imaging and output. Includes individual and group reviews, field trips, and visits from outside professionals. Topical focus changes each term; coursework centers on student-initiated project with emphasis on conceptual, theoretical, and technical development. Additional work required of students taking the graduate version. Equipment available for checkout. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.345 Advanced Photography and Related Media**

Subject meets with 4.344

Prereq: 4.342 or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

Units arranged

Can be repeated for credit.

Fosters critical awareness of how images in our culture are produced and constructed. Covers a range of experimental techniques and camera formats, advanced traditional and experimental black-and-white darkroom printing, and all aspects of digital imaging and output. Includes individual and group reviews, field trips, and visits from outside professionals. Topical focus changes each term; coursework centers on student-initiated project with emphasis on conceptual, theoretical, and technical development. Additional work required of students taking the graduate version. Equipment available for checkout. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.346 Aesthetic Revolutions: Crafting Avant-Garde Film & Video**

Subject meets with 4.347  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: U (Fall)  
 3-3-6 units  
 Can be repeated for credit.

Students explore the complexities of avant-garde cinematic practices through crafting short videos. By studying the conceptual, technical, and social dimensions of avant-garde cinema, participants develop innovative storytelling approaches that challenge mainstream conventions. Students engage in film screenings and discussions that trace the history of moving images from their origins to the contemporary era, with a specific focus on avant-garde practices. Introduces practical knowledge of video capturing, audio recording, lighting, and editing, while emphasizing aesthetic strategies for individual concept development. Specific project topics may vary each term, allowing for the opportunity to repeat for credit. Lab fee required. Limited to 25.

*Consult N. Sinnokrot*

**4.347 Aesthetic Revolutions: Crafting Avant-Garde Film & Video**

Subject meets with 4.346  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 3-3-6 units  
 Can be repeated for credit.

Students explore the complexities of avant-garde cinematic practices through crafting short videos. By studying the conceptual, technical, and social dimensions of avant-garde cinema, participants develop innovative storytelling approaches that challenge mainstream conventions. Students engage in film screenings and discussions that trace the history of moving images from their origins to the contemporary era, with a specific focus on avant-garde practices. Introduces practical knowledge of video capturing, audio recording, lighting, and editing, while emphasizing aesthetic strategies for individual concept development. Specific project topics may vary each term, allowing for the opportunity to repeat for credit. Lab fee required. Limited to 25.

*Consult N. Sinnokrot*

**4.352 Advanced Video and Related Media**

Subject meets with 4.353  
 Prereq: 4.354 or permission of instructor  
 U (Spring)  
 3-3-6 units. HASS-A

Introduces advanced strategies of image and sound manipulation, both technical and conceptual. Covers pre-production planning (storyboards and scripting), refinement of digital editing techniques, visual effects such as chroma-keying, post-production, as well as audio and sonic components. Context provided by regular viewings of contemporary video artworks and other audio-visual formats. Students work individually and in groups to develop skills in media literacy and communication. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.353 Advanced Video and Related Media**

Subject meets with 4.352  
 Prereq: 4.355 or permission of instructor  
 G (Spring)  
 Units arranged

Introduces advanced strategies of image and sound manipulation, both technical and conceptual. Covers pre-production planning (storyboards and scripting), refinement of digital editing techniques, visual effects such as chroma-keying, post-production, as well as audio and sonic components. Context provided by regular viewings of contemporary video artworks and other audio-visual formats. Students work individually and in groups to develop skills in media literacy and communication. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.354 Introduction to Video and Related Media**

Subject meets with 4.355  
 Prereq: None  
 U (Fall)  
 3-3-6 units. HASS-A

Examines the technical and conceptual variables and strategies inherent in contemporary video art practice. Analyzes structural concepts of time, space, perspective, and sound within the art form. Building upon the historical legacy of the moving the image, students render self-exploration, performance, social critique, and manipulation of raw experience into an aesthetic form. Emphasizes practical knowledge of lighting, video capturing and editing, and montage. Presentation and critique of student work, technical workshops, screenings, and reading discussions assist students with final project. Additional work required of students taking the graduate version. Lab fee required.

*Consult A. Aksamija*

**4.355 Introduction to Video and Related Media**

Subject meets with 4.354

Prereq: None

G (Fall)

Units arranged

Examines the technical and conceptual variables and strategies inherent in contemporary video art practice. Analyzes structural concepts of time, space, perspective, and sound within the art form. Building upon the historical legacy of film and other time-based image media, students render self-exploration, performance, social critique, and manipulation of raw experience into an aesthetic form. Emphasizes practical knowledge of lighting, video capturing and editing, and montage. Includes presentation and critique of student work, technical workshops, screenings, and readings with the objective of a final creative project. Additional work required of students taking the graduate version. Lab fee required.

*Consult A. Aksamija*

**4.356 Cinematic Migrations**

Subject meets with 4.357

Prereq: 4.301, 4.302, 4.354, or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Fall)

3-3-6 units. HASS-A

Explores ideas and contexts behind moving images through a multifaceted look at cinema's transmutations, emergence on local and national levels, and global migrations. Examines the transformation caused by online video, television, spatial installations, performances, dance, and many formats and portable devices, as well as the theory and context of film's categorization, dissemination, and analysis. Presentations, screenings, field trips, readings, visiting artists, and experimental transdisciplinary projects broaden the perception of present cinema. Additional work required of students taking the graduate version. Lab fee required. Limited to 12.

*R. Green*

**4.357 Cinematic Migrations**

Subject meets with 4.356

Prereq: 4.355 or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Fall)

Units arranged

Can be repeated for credit.

Explores ideas and contexts behind moving images through a multifaceted look at cinema's transmutations, emergence on local and national levels, and global migrations. Examines the transformation caused by online video, television, spatial installations, performances, dance, and many formats and portable devices, as well as the theory and context of film's categorization, dissemination, and analysis. Presentations, screenings, field trips, readings, visiting artists, and experimental transdisciplinary projects broaden the perception of present cinema. Additional work required of students taking the graduate version. Lab fee required. Limited to 12.

*R. Green*

**4.359 Synchronizations of Senses**

Prereq: None

G (Fall)

3-0-6 units

Focused on the practices of varied practitioners — film directors, artists, musicians, composers, architects, designers — whose writings relay a process of thinking and feeling integral to their forms of material production. Testing various ways aesthetic forms and their shifts — historic and contemporary — have relations to still emerging contemporary subjectivities (felt emotion in a human body), the class studies productions created by participants and case studies of varied producers, and generates new work individually and/or collaboratively via diverse media explorations. Includes reading, writing, drawing, and publishing, as well as photographic, cinematic, spatial, and audio operations and productions. Activities include screenings, listening assignments, and guest visits, in addition to readings, discussions, and presentations. Lab fee required. Limited to 12.

*R. Green*

#### **4.360 Transversal Design for Social Impact**

Prereq: None

G (Spring; first half of term)

2-0-4 units

Combines the critical lens of art with the innovation framework of DesignX, promoting introspection and deliberation before diving into thoughtful design interventions. Initiates a transdisciplinary collaboration between ACT and the Morningside Academy for Design through DesignX. Students design and present visual representations on the social impact area on which they choose to innovate and explore. Undergraduates welcome. Lab fee required. Limited to 20.

*Consult Y. Kong*

#### **4.361 Performance Art Workshop**

Subject meets with 4.362

Prereq: 4.301, 4.302, or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Spring)

3-3-6 units. HASS-A

Explores performance in relation to the body as a space of resistance, the collective body and its powers, and performative acts that blur boundaries between art and life. Students trace gestures of care and conviviality by enacting scores and poetry, altering screens and other walls that divide and separate us, reclaiming time and undoing categories that alienate our bodies from life itself. Activities include contact improvisation, walking, reading, screening, and discussing theoretical, historical, and contemporary issues in relation to performance art. Several small performance-based projects, both collective and individual, assigned throughout the semester. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.362 Performance Art Workshop**

Subject meets with 4.361

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

Units arranged

Explores performance in relation to the body as a space of resistance, the collective body and its powers, and performative acts that blur boundaries between art and life. Students trace gestures of care and conviviality by enacting scores and poetry, altering screens and other walls that divide and separate us, reclaiming time and undoing categories that alienate our bodies from life itself. Activities include contact improvisation, walking, reading, screening, and discussing theoretical, historical and contemporary issues in relation to performance art. Several small performance-based projects, both collective and individual, assigned throughout the semester. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.368 Studio Seminar in Art and the Public Sphere**

Subject meets with 4.369

Prereq: 4.301 or 4.302

U (Spring)

3-3-6 units. HASS-A

Focuses on the production of artistic interventions in public space. Explores ideas, situations, objects, and materials that shape public space and inform the notion of public and publicness, with an emphasis on co-production and cooperative ethics. Examines forms of environmental art in comparison to temporal and critical forms of art and action in the public sphere. Historical models include the Russian Constructivists, the Situationists International, system aesthetics, participatory and conceptual art, contemporary interventionist tactics and artistic strategies, and methods of public engagement. Students develop an initial concept for a publicly-situated project. Includes guest lectures, visiting artist presentations, and optional field trips. Additional work required of students taking graduate version. Lab fee required. Limited to 12.

*Consult G. Urbonas*

**4.369 Studio Seminar in Art and the Public Sphere**

Subject meets with 4.368

Prereq: None

G (Spring)

3-3-6 units

Focuses on the production of artistic interventions in public space. Explores ideas, situations, objects, and materials that shape public space and inform the notion of public and publicness, with an emphasis on co-production and cooperative ethics. Examines forms of environmental art in comparison to temporal and critical forms of art and action in the public sphere. Historical models include the Russian Constructivists, the Situationists International, system aesthetics, participatory and conceptual art, contemporary interventionist tactics and artistic strategies, and methods of public engagement. Students develop an initial concept for a publicly-situated project. Includes guest lectures, visiting artist presentations, and optional field trips. Additional work required of students taking graduate version. Lab fee required. Limited to 12.

*Consult G. Urbonas*

**4.373 Advanced Projects in Art, Culture, and Technology**

Subject meets with 4.374

Prereq: 4.301, 4.302, or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Fall)

3-3-6 units. HASS-A

Can be repeated for credit.

Investigates conceptual and formal issues in a variety of media. Explores representation, interpretation and meaning, and how these relate to historical, social and cultural contexts. Helps students develop an initial concept for a publicly situated project. Includes guest lectures and visiting artist presentations. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.374 Advanced Projects in Art, Culture, and Technology**

Subject meets with 4.373

Prereq: Permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Fall)

Units arranged

Can be repeated for credit.

Investigates conceptual and formal issues in a variety of media. Explores representation, interpretation and meaning, and how these relate to historical, social and cultural contexts. Helps students develop an initial concept for a publicly situated project. Includes guest lectures and visiting artist presentations. Additional work required of students taking graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

**4.376[J] Transmedia Art, Extraction, and Environmental Justice**

Same subject as CMS.374[J]

Subject meets with CMS.877

Prereq: None

U (Spring)

Not offered regularly; consult department

2-3-7 units. HASS-A

See description under subject CMS.374[J].

*J. Barry*

**4.378 Future Heritage Workshop**

Subject meets with 4.379

Prereq: None

U (Fall)

3-0-9 units

Can be repeated for credit.

Probes the ethics and aesthetics of historic preservation through an artistic lens. Introduces a range of themes related to politics of heritage, memory and commemoration, trauma, iconoclasm, and more. Explores the agency of monuments in relation to colonialism, nationalism, social justice, and democracy. Research is conducted in groups, through which students analyze contested heritage sites through critical artistic and spatial practices addressing traumatic, troubling, or toxic memory. Lectures, screenings, readings, and discussions inform the development of individual projects. At the end of the semester, students create projects that may involve artistic tools, collective learning experiences, creative processes, and transdisciplinary knowledge exchanges that demonstrate a new way of capturing, sustaining, and developing future heritage. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.379 Future Heritage Workshop**

Subject meets with 4.378

Prereq: None

G (Fall)

Units arranged

Can be repeated for credit.

Probes the ethics and aesthetics of historic preservation through an artistic lens. Introduces a range of themes related to politics of heritage, memory and commemoration, trauma, iconoclasm, and more. Explores the agency of monuments in relation to colonialism, nationalism, social justice, and democracy. Research is conducted in groups, through which students analyze contested heritage sites through critical artistic and spatial practices addressing traumatic, troubling, or toxic memory. Lectures, screenings, readings, and discussions inform the development of individual projects. At the end of the semester, students create projects that may involve artistic tools, collective learning experiences, creative processes, and transdisciplinary knowledge exchanges that demonstrate a new way of capturing, sustaining, and developing future heritage. Additional work required of students taking the graduate version. Lab fee required. Limited to 20.

*Consult A. Aksamija*

#### **4.387 Thesis I: Art, Culture, and Technology Theory and Criticism Colloquium**

Prereq: None

G (Fall)

Not offered regularly; consult department

3-0-6 units

Can be repeated for credit.

Introduces foundational texts in contemporary theory and criticism at the intersection of art, culture, and technology. Through presentations and discussions, students explore the necessary methodological perspectives required of an interdisciplinary approach to artistic practices. Subject spans fall and IAP terms. Limited to SMACT students.

*Consult A. Aksamija*

#### **4.388 Thesis II: SMACT Thesis Preparation**

Prereq: Permission of instructor

G (IAP)

Not offered regularly; consult department

3-0-6 units

Can be repeated for credit.

Aids students in the selection of a thesis topic, development of an approach method, preparation of a proposal that includes an outline for their thesis. Explores artistic practice as a method of critical inquiry and knowledge production/dissemination. Students examine artist writings and consider academic formats and standards. Regular group meetings, including peer reviews, are supplemented by independent study and individual conferences with faculty. Restricted to first-year SMACT students.

*Consult A. Aksamija*

#### **4.389 Thesis III: SMACT Thesis Tutorial**

Prereq: 4.388

G (Fall)

Not offered regularly; consult department

3-0-6 units

Can be repeated for credit.

Series of tutorials that includes regular presentations of student writing in group critiques and supports independent thesis research and development by providing guidance on research strategy and written presentation. Sessions supplemented by regular individual conferences with thesis committee members. Restricted to second-year SMACT students.

*Consult A. Aksamija*

**4.390 Art, Culture, and Technology Studio and Thesis Colloquium**

Prereq: Permission of instructor

G (Fall, Spring)

4-2-18 units

Can be repeated for credit.

Explores the theory and criticism of intersections between art, culture, and technology in relation to contemporary artistic practice, critical design, and media. Students consider methods of investigation, documentation, and display and explore modes of communication. Students develop projects in which they organize research goals, engage in production, cultivate a context for practice, and explore how to communicate, display, and document work, with artistic practice as a method of critical inquiry/knowledge dissemination. Regular presentation and peer-critiques, reviews with ACT faculty and fellows, and external guest reviewers provide feedback as projects develop. Simultaneously, students prepare for thesis through both foundational texts in contemporary theory and criticism and artist writings, alongside presentations and discussions on methodological perspectives required of interdisciplinary approaches. Restricted to SMACT students.

*Consult A. Aksamija***4.391 Independent Study in Art, Culture, and Technology**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Art, Culture, and Technology Staff***4.392 Independent Study in Art, Culture, and Technology**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Art, Culture, and Technology Staff***4.393 Independent Study in Art, Culture, and Technology**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Art, Culture, and Technology Staff***4.394 Independent Study in Art, Culture, and Technology**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Art, Culture, and Technology Staff***4.530 Special Subject: Art, Culture, and Technology**

Prereq: None

U (Fall, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Art, Culture, and Technology Staff***4.531 Special Subject: Art, Culture, and Technology**

Prereq: None

U (IAP)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Art, Culture, and Technology Staff*

**4.S32 Special Subject: Art, Culture, and Technology**

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

**4.S33 Special Subject: Art, Culture, and Technology**

Prereq: Permission of instructor

G (Fall)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

**4.S34 Special Subject: Art, Culture, and Technology**

Prereq: Permission of instructor

G (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

**4.S35 Special Subject: Art, Culture, and Technology**

Prereq: Permission of instructor

G (Fall, Spring)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult A. Aksamija*

**4.S36 Special Subject: Art, Culture and Technology**

Prereq: Permission of instructor

G (IAP)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

**4.S37 Special Subject: Art, Culture, and Technology**

Prereq: None

U (Fall)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

**4.S38 Special Subject: Art, Culture and Technology**

Prereq: None

U (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in visual arts that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor. Per-term \$75 fee after Add Date; SMACT students are exempt.

*Consult Art, Culture, and Technology Staff*

## Building Technology

### 4.401 Environmental Technologies in Buildings

Subject meets with 1.564[[]], 4.464[[]]

Prereq: None

U (Fall)

3-2-7 units. REST

Introduction to the study of the thermal and luminous behavior of buildings. Examines the basic scientific principles underlying these phenomena and introduces students to a range of technologies and analysis techniques for designing comfortable indoor environments. Challenges students to apply these techniques and explore the role energy and light can play in shaping architecture. Additional work required of students taking the graduate version.

*C. Reinhart*

### 4.411[[]] D-Lab Schools: Building Technology Laboratory

Same subject as EC.713[[]]

Prereq: Calculus I (GIR) and Physics I (GIR)

U (Fall)

Not offered regularly; consult department

2-3-7 units. Institute LAB

Focuses on the design, analysis, and application of technologies that support the construction of less expensive and better performing schools in developing countries. Prepares students to design or retrofit school buildings in partnership with local communities and NGOs. Strategies covered include daylighting, passive heating and cooling, improved indoor air quality via natural ventilation, appropriate material selection, and structural design. Investigations are based on application of engineering fundamentals, experiments and simulations. Case studies illustrate the role of technologies in reducing barriers to improved education. Additional work required of students taking the graduate version. Limited to 20 total for versions meeting together.

*L. K. Norford*

### 4.412 D-Lab Schools: Building Technology Laboratory

Prereq: Permission of instructor

G (Fall)

Not offered regularly; consult department

Units arranged

Focuses on the design, analysis, and application of technologies that support the construction of less expensive and better performing schools in developing countries. Prepares students to design or retrofit school buildings in partnership with local communities and NGOs. Strategies covered include daylighting, passive heating and cooling, improved indoor air quality via natural ventilation, appropriate material selection, and structural design. Investigations are based on application of engineering fundamentals, experiments and simulations. Case studies illustrate the role of technologies in reducing barriers to improved education. Additional work required of students taking the graduate version. Limited to 20 total for versions meeting together.

*Consult L. K. Norford*

### 4.421 Space-Conditioning Systems for Low-Carbon Buildings

Prereq: None

G (Spring)

Not offered regularly; consult department

Units arranged

Studies the physical principles of, and design strategies for, natural and mechanical systems for conditioning high-performance buildings that are needed to reduce anthropogenic emissions of greenhouse gases in coming decades. Topics include the dynamics of airflow in buildings in urban areas and the design of natural and mixed-mode ventilation systems, low-energy strategies and systems for dehumidification and sensible cooling, thermal storage at diurnal and seasonal time scales, and district heating and cooling systems. System design in leading commercial practice is presented and critiqued by invited practitioners and students. Through a group project, students assess climate- and building-specific systems on the basis of energy consumption, carbon emissions, and resilience to climate change.

*L. K. Norford*

### 4.424[[]] Modeling and Approximation of Thermal Processes

Same subject as 2.52[[]]

Prereq: 2.51

G (Fall)

Not offered regularly; consult department

3-0-9 units

See description under subject 2.52[[]].

*L. R. Glicksman*

#### **4.431 Architectural Acoustics**

Prereq: Permission of instructor  
Acad Year 2025-2026: G (Spring)  
Acad Year 2026-2027: Not offered  
Units arranged

Describes interactions between people and sound, indoors and outdoors, and uses this information to develop acoustical design criteria for architecture and planning. Principles of sound generation, propagation, and reception. Properties of materials for sound absorption, reflection, and transmission. Design implications for performance and gathering spaces. Use of computer modeling techniques.

*Building Technology Staff*

#### **4.432 Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods**

Subject meets with 4.433  
Prereq: Permission of instructor  
Acad Year 2025-2026: U (Spring)  
Acad Year 2026-2027: Not offered  
3-2-7 units

Studies energy flows in and around groups of buildings from individual buildings to complete large-scale neighborhoods. Students use emerging digital techniques to analyze and influence building design interventions in relation to energy use for construction (embodied energy) and operation, access to daylight, and assessing walkability and outdoor comfort at the neighborhood scale. Additional work required of students taking the graduate version.

*Consult C. Reinhart*

#### **4.433 Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods**

Subject meets with 4.432  
Prereq: Permission of instructor  
Acad Year 2025-2026: G (Spring)  
Acad Year 2026-2027: Not offered  
3-2-4 units

Studies energy flows in and around groups of buildings from individual buildings to complete large-scale neighborhoods. Students use emerging digital techniques to analyze and influence building design interventions in relation to energy use for construction (embodied energy) and operation, access to daylight, and assessing walkability and outdoor comfort at the neighborhood scale. Additional work required of students taking the graduate version.

*Consult C. Reinhart*

#### **4.440[JJ] Introduction to Structural Design**

Same subject as 1.056[JJ]  
Subject meets with 4.462  
Prereq: Calculus II (GIR)  
U (Spring)  
3-3-6 units. Institute LAB

Introduces the design and behavior of large-scale structures and structural materials. Emphasizes the development of structural form and the principles of structural design. Presents design methods for timber, masonry, concrete, and steel applied to long-span roof systems, bridges, and high-rise buildings. Includes environmental assessment of structural systems and materials. In laboratory sessions, students solve structural problems by building and testing simple models. Graduate and undergraduate students have separate lab sections.

*Consult J. Ochsendorf*

#### **4.441 From the Solar House to Net Zero Buildings**

Subject meets with 4.442  
Prereq: 4.401 or permission of instructor  
Acad Year 2025-2026: Not offered  
Acad Year 2026-2027: U (Spring)  
3-2-7 units

Provides necessary historic awareness and technical skills for becoming agents of change for a carbon neutral building sector by further merging the fields of architectural design and environmental performance analysis. Students are presented with a "typical" building and explore various interventions, from envelope improvements to reduced internal lighting and equipment loads, ventilation and HVAC upgrades as well as onsite deployment of photovoltaics. Discusses which energy flows to pay attention to for different building types and how to productively work with the local microclimate, knowledge which can later promote elevated discussions between architect and environmental consultant. Students taking graduate version complete additional assignments.  
*C. Reinhart*

**4.442 From the Solar House to Net Zero Buildings**

Subject meets with 4.441

Prereq: 4.464[[]] or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

3-2-4 units

Provides necessary historic awareness and technical skills for becoming agents of change for a carbon neutral building sector by further merging the fields of architectural design and environmental performance analysis. Students are presented with a "typical" building and explore various interventions, from envelope improvements to reduced internal lighting and equipment loads, ventilation and HVAC upgrades as well as onsite deployment of photovoltaics. Discusses which energy flows to pay attention to for different building types and how to productively work with the local microclimate, knowledge which can later promote elevated discussions between architect and environmental consultant. Students taking graduate version complete additional assignments.

*C. Reinhart*

**4.450[[]] Computational Structural Design and Optimization**

Same subject as 1.575[[]]

Subject meets with 4.451

Prereq: ((1.000 or (6.100A and 6.100B)) and (1.050, 2.001, or 4.462)) or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Fall)

Units arranged

Research seminar focusing on emerging applications of computation for creative, early-stage structural design and optimization for architecture. Incorporates computational design fundamentals, including problem parameterization and formulation; design space exploration strategies, including interactive, heuristic, and gradient-based optimization; and computational structural analysis methods, including the finite element method, graphic statics, and approximation techniques. Programming experience and familiarity with structural mechanics necessary. Additional work required of students taking graduate version. Limited to 25 total for versions meeting together.

*Consult C. Mueller*

**4.451 Computational Structural Design and Optimization**

Subject meets with 1.575[[]], 4.450[[]]

Prereq: ((1.000 or (6.100A and 6.100B)) and (1.050, 2.001, or 4.440[[]])) or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Fall)

3-0-9 units

Research seminar focusing on emerging applications of computation for creative, early-stage structural design and optimization for architecture. Incorporates computational design fundamentals, including problem parameterization and formulation; design space exploration strategies, including interactive, heuristic, and gradient-based optimization; and computational structural analysis methods, including the finite element method, graphic statics, and approximation techniques. Programming experience and familiarity with structural mechanics necessary. Additional work required of students taking graduate version. Limited to 25 total for versions meeting together.

*Consult C. Mueller*

**4.453 Creative Machine Learning for Design**

Prereq: 6.1010 or permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

3-0-9 units

Focuses on applications of machine learning (ML) for creative design generation and data-informed design exploration, with an emphasis on visual and 3-D generative systems. Explores how recent advances in artificial intelligence, and specifically machine learning, can offer humans more natural, performance-driven design processes. Covers a wide range of machine learning algorithms and their applications to design, with topics including neural networks, generative adversarial networks, variational autoencoders, dimensionality reduction, geometric deep learning, and other ML techniques. Includes an open-ended, applied research or design project demonstrating an original, creative use of machine learning for design, architecture, engineering, or art. Limited to 20.

*C. Müller*

#### **4.462 Introduction to Structural Design**

Subject meets with 1.056[()], 4.440[()]

Prereq: Permission of instructor

G (Spring)

3-2-4 units

Introduces the design and behavior of large-scale structures and structural materials. Emphasizes the development of structural form and the principles of structural design. Introduces design methods for timber, masonry, concrete, and steel applied to long-span roof systems, bridges, and high-rise buildings. Includes environmental assessment of structural systems and materials. Laboratory to solve structural problems by building and testing simple models. Graduate and undergraduate students have separate lab sections.

*Consult J. Ochsendorf*

#### **4.463 Building Technology Systems: Structures and Envelopes**

Prereq: 4.440[()], 4.462, or permission of instructor

G (Fall)

3-2-4 units

Addresses advanced structures, exterior envelopes, and contemporary production technologies. Continues the exploration of structural elements and systems, expanding to include more complex determinate, indeterminate, long-span, and high-rise systems. Topics include reinforced concrete, steel and engineered-wood design, and an introduction to tensile systems. The contemporary exterior envelope is discussed with an emphasis on the classification of systems, performance attributes, and analysis techniques, material specifications and novel construction technologies.

*C. Mueller*

#### **4.464[()] Environmental Technologies in Buildings**

Same subject as 1.564[()]

Subject meets with 4.401

Prereq: None

G (Fall)

3-2-4 units

Introduction to the study of the thermal and luminous behavior of buildings. Examines the basic scientific principles underlying these phenomena and introduces students to a range of technologies and analysis techniques for designing comfortable indoor environments. Challenges students to apply these techniques and explore the role energy and light can play in shaping architecture. Additional work required of students taking the graduate version.

*C. Reinhart*

#### **4.481 Building Technology Seminar**

Prereq: Permission of instructor

G (Fall)

2-0-1 units

Fundamental research methodologies and ongoing investigations in building technology to support the development of student research projects. Topics drawn from low energy building design and thermal comfort, building systems analysis and control, daylighting, structural design and analysis, novel building materials and construction techniques and resource dynamics. Organized as a series of two- and three-week sessions that consider topics through readings, discussions, design and analysis projects, and student presentations.

*Consult L. R. Glicksman, C. Mueller, C. Reinhart, L. K. Norford, J. Ochsendorf*

#### **4.488 Preparation for S.M.B.T. Thesis**

Prereq: Permission of instructor

G (Fall, IAP, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Selection of thesis topic, definition of method of approach, and preparation of thesis proposal. Independent study supplemented by individual conference with faculty.

*Building Technology Staff*

#### **4.489 Preparation for Building Technology Ph.D. Thesis**

Prereq: Permission of instructor

G (Fall, IAP, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Selection of thesis topic, definition of method of approach, and preparation of thesis proposal. Independent study supplemented by individual conference with faculty.

*Building Technology Staff*

#### **4.491 Independent Study in Building Technology**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Building Technology Staff*

**4.492 Independent Study in Building Technology**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Building Technology Staff***4.493 Independent Study in Building Technology**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Building Technology Staff***4.494 Independent Study in Building Technology**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Building Technology Staff***4.S40 Special Subject: Building Technology**

Prereq: None

U (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in building technology that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff***4.S41 Special Subject: Building Technology**

Prereq: None

U (IAP, Spring)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in building technology that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff***4.S42 Special Subject: Building Technology**

Prereq: Permission of instructor

G (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in building technology that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Building Technology Staff***4.S43 Special Subject: Building Technology**

Prereq: Permission of instructor

G (Fall)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in building technology that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Architecture Building Technology Staff***4.S44 Special Subject: Building Technology**

Prereq: Permission of instructor

G (Fall, IAP)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in building technology that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff*

#### **4.S45 Special Subject: Building Construction**

Prereq: Permission of instructor

G (IAP)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in building construction that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff*

#### **4.S46 Special Subject: Energy in Buildings**

Prereq: Permission of instructor

G (Fall)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in energy in buildings that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff, L. K. Norford*

#### **4.S47 Special Subject: Architectural Lighting**

Prereq: Permission of instructor

G (IAP, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in architectural lighting that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Building Technology Staff*

#### **4.S48 Special Subject: Structural Design**

Prereq: Permission of instructor

G (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in structural design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Building Technology Staff*

## **Computation**

#### **4.500 Design Computation: Art, Objects, and Space**

Subject meets with 4.505

Prereq: None

U (Fall)

2-2-8 units

Introduces 3-D CAD modeling to students with little or no experience in design or computation. Teaches surface, solid and mesh modeling techniques combined with a variety of modeling applications, from 3D printing to CNC fabrication and 3D rendering. Includes weekly modeling assignments leading up to a final project. Students taking graduate version complete additional assignments. Lab fee required. Limited to 12 for versions meeting together; preference to Course 4 majors and design minors.

*Consult L. Sass*

#### **4.501 Tiny Fab: Advancements in Rapid Design and Fabrication of Small Homes**

Prereq: 4.500

U (Spring)

2-3-7 units

Introduces digital fabrication as a method of home, hut, and shelter delivery/construction. Explores the progression of industrial-based building production from prefab to digital fab. Examines new computational techniques for rapid construction, as well as the basics of tiny building design, 3D modeling systems, scalable ways to prototype, and computer numerical control (CNC) fabrication. Students use lab time to design a prototype of a small building as a single packaged product. Lab fee required. Enrollment limited; preference to Course 4 majors and minors.

*Consult L. Sass*

#### **4.502 Advanced Visualization: Architecture in Motion Graphics**

Subject meets with 4.562

Prereq: 4.500 or permission of instructor

U (Fall)

3-2-7 units

Advanced projects in architectural visualization with an emphasis on the use of computer graphics animation, interactive media, and video production tools. Introduces advanced visualization software and teaches exploration of spatial expressions in motion graphics format. Review and discussion of selected literature and video materials on architecture and film. Additional work required of students taking the graduate version. Preference to Course 4 and 4-B majors and Design and Architecture minors.

*T. Nagakura*

**4.505 Design Computation: Art, Objects, and Space**

Subject meets with 4.500

Prereq: None

G (Fall)

2-2-8 units

Introduces 3-D CAD modeling to students with little or no experience in design or computation. Teaches surface, solid, and mesh modeling techniques combined with a variety of modeling applications — from 3D printing to CNC fabrication and 3D rendering. Includes weekly modeling assignments leading up to a final project. Students taking graduate version complete additional assignments. Lab fee required. Limited to 12 for versions meeting together; preference to Course 4 majors and design minors.

*L. Sass*

**4.507 Introduction to Building Information Modeling in Architecture**

Subject meets with 4.567

Prereq: None

U (Spring)

3-2-7 units

Addresses fundamental methods, theories, and practices that engage contemporary modeling tools in the context of architectural design. Introduces selected academic and professional topics through lectures, demonstrations, and assignments. Topics include parametric modeling, component types and assembly, prototyping, scripting, and simulations. Initiates intellectual explorations in the use of building information modeling in research projects and design practices. Additional work required of students taking graduate version.

*T. Nagakura*

**4.511 Tiny Fab: Advancements in Rapid Design and Fabrication of Small Homes**

Prereq: 4.105 or permission of instructor

G (Spring)

Units arranged

Introduces digital fabrication as a method of home, hut, and shelter delivery/construction. Explores the progression of industrial-based building production from prefab to digital fab. Examines new computational techniques for rapid construction, as well as the basics of tiny building design, 3D modeling systems, scalable ways to prototype, and computer numerical control (CNC) fabrication. Students use lab time to design a prototype of a small building as a single packaged product. Lab fee required. Enrollment limited; preference to MArch students.

*L. Sass*

**4.520 Visual Computing**

Subject meets with 4.521

Prereq: None

U (Spring)

3-0-9 units

Introduces a visual-perceptual, rule-based approach to design using shape grammars. Covers grammar fundamentals through lectures and in-class exercises. Focuses on shape grammar applications, from stylistic analysis to creative design, through presentations of past applications and through short student exercises and projects. Presents computer programs for automating shape grammars. Additional work required of students taking graduate version. Enrollment limited; preference to Course 4 majors and minors.

*Consult T. Knight*

**4.521 Visual Computing**

Subject meets with 4.520

Prereq: None

G (Spring)

3-0-6 units

Introduces a visual-perceptual, rule-based approach to design using shape grammars. Covers grammar fundamentals through lectures and in-class, exercises. Focuses on shape grammar applications, from stylistic analysis to creative design, through presentations of past applications and through short student exercises and projects. Presents computer programs for automating shape grammars. Additional work required of students taking graduate version. Enrollment limited; preference to MArch students.

*Consult T. Knight*

**4.540 Introduction to Shape Grammars I**

Prereq: None

G (Fall)

3-0-6 units

An in-depth introduction to shape grammars and their applications in architecture and related areas of design. Shapes in the algebras  $U_i$ ,  $V_i$ , and  $W_i$  incorporating labels and weights, and in algebras formed as composites of these. Rules and computations, shape and structure, designs.

*G. Stiny*

#### **4.541 Introduction to Shape Grammars II**

Prereq: 4.540

G (Spring)

3-0-6 units

An in-depth introduction to shape grammars and their applications in architecture and related areas of design. Shapes in the algebras  $U_i$ ,  $V_j$ , and  $W_j$  incorporating labels and weights, and in algebras formed as composites of these. Rules and computations. Shape and structure. Designs.

*Consult G. Stiny*

#### **4.542 Background to Shape Grammars**

Prereq: 4.541 or permission of instructor

G (Spring)

3-0-6 units

Can be repeated for credit.

An advanced examination of the shape grammar formalism and its relationship to some key issues in a variety of other fields, including art and design, philosophy, history and philosophy of science, linguistics and psychology, literature and literary studies, logic and mathematics, and artificial intelligence. Student presentations and discussion of selected readings are encouraged. Topics vary from year to year. Can be repeated with permission of instructor.

*Consult G. Stiny*

#### **4.550 Computational Design Lab**

Subject meets with 4.570

Prereq: Permission of instructor

U (Spring)

Units arranged

Can be repeated for credit.

Provides students with an opportunity to explore projects that engage real world problems concerning spatial design, technology, media, and society. In collaboration with industry partners and public institutions, students identify topical issues and problems, and also explore and propose solutions through the development of new ideas, theories, tools, and prototypes. Industry and academic collaborators act as a source of expertise, and as clients and critics of projects developed during the term. General theme of workshop varies by semester or year. Open to students from diverse backgrounds in architecture and other design-related areas. Additional work required of students taking graduate version.

*T. Nagakura*

#### **4.557[[]] City Science**

Same subject as MAS.552[[]]

Prereq: Permission of instructor

G (Fall, Spring)

3-0-9 units

Can be repeated for credit.

See description under subject MAS.552[[]].

*K. Larson*

#### **4.562 Advanced Visualization: Architecture in Motion Graphics**

Subject meets with 4.502

Prereq: Permission of instructor

G (Fall)

3-2-7 units

Advanced projects in architectural visualization with an emphasis on the use of computer graphics animation, interactive media, and video production tools. Introduces advanced visualization software and teaches exploration of spatial expressions in motion graphics format. Review and discussion of selected literature and video materials on architecture and film. Additional work required of students taking the graduate version. Preference to Course 4 and 4-B majors and Design and Architecture minors.

*Consult T. Nagakura*

#### **4.566 Advanced Projects in Digital Media**

Prereq: Permission of instructor

G (Fall)

Units arranged

Can be repeated for credit.

Develop independent projects in the study of digital media as it relates to architectural design. Students propose a project topic such as digital design tool, modeling and visualization, motion graphics, interactive design, design knowledge representation, and media interface. Limited to 5.

*T. Nagakura*

**4.567 Introduction to Building Information Modeling in Architecture**

Subject meets with 4.507

Prereq: None

G (Spring)

Units arranged

Addresses fundamental methods, theories, and practices that engage contemporary modeling tools in the context of architectural design. Introduces selected academic and professional topics through lectures, demonstrations, and assignments. Topics include parametric modeling, component types and assembly, prototyping, scripting, and simulations. Initiates intellectual explorations in the use of building information modeling in research projects and design practices. Additional work required of students taking graduate version. Preference given to MArch students.

*T. Nagakura*

**4.570 Computational Design Lab**

Subject meets with 4.550

Prereq: Permission of instructor

G (Spring)

Units arranged

Can be repeated for credit.

Provides students with an opportunity to explore projects that engage real world problems concerning spatial design, technology, media, and society. In collaboration with industry partners and public institutions, students identify topical issues and problems, and also explore and propose solutions through the development of new ideas, theories, tools, and prototypes. Industry and academic collaborators act as a source of expertise, and as clients and critics of projects developed during the term. General theme of workshop varies by semester or year. Open to students from diverse backgrounds in architecture and other design-related areas. Additional work required of students taking graduate version.

*T. Nagakura*

**4.580 Inquiry into Computation and Design**

Prereq: Permission of instructor

G (Fall)

3-0-9 units

Explores the varied nature, history and practice of computation in design through lectures, readings, small projects, discussions, and guest visits by Computation group faculty and others. Topics may vary from year to year. Aims to help students develop a critical awareness of different approaches to and assumptions about computation in design beyond the specifics of techniques and tools, and to open avenues for further research.

*Consult T. Knight*

**4.581 Proseminar in Computation**

Prereq: Permission of instructor

G (Fall)

3-0-9 units

Can be repeated for credit.

Introduction to traditions of research in design and computation scholarship.

*G. Stiny*

**4.582 Research Seminar in Computation**

Prereq: 4.580 or permission of instructor

G (Fall, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

In-depth presentations of current research in design and computation.

*G. Stiny*

**4.583 Forum in Computation**

Prereq: Permission of instructor

G (Fall)

3-0-0 units

Can be repeated for credit.

Group discussions and presentation of ongoing graduate student research in the Computation program.

*T. Knight*

**4.587 SMArchS Computation Pre-Thesis Preparation**

Prereq: 4.221 or permission of instructor

G (Spring)

3-0-3 units

Preliminary study in preparation for the thesis for the SMArchS degree in Computation. Topics include literature search, precedents examination, thesis structure and typologies, and short writing exercise.

*T. Knight, T. Nagakura*

**4.588 Preparation for SMArchS Computation Thesis**

Prereq: None

G (Fall, Spring, Summer)

Units arranged

Can be repeated for credit.

Students select thesis topic, define method of approach, and prepare thesis proposal for SMArchS Computation degree. Faculty supervision on a group basis. Intended for SMArchS Computation program students, prior to registration for 4.ThG. Limited to SMArchS Computation students.

*Consult L. Sass*

**4.589 Preparation for Design and Computation PhD Thesis**

Prereq: Permission of instructor

G (Fall, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Selection of thesis topic, definition of method of approach, and preparation of thesis proposal in computation. Independent study supplemented by individual conference with faculty.

*Computation Staff*

**4.591 Independent Study in Architectural Computation**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Computation Staff*

**4.592 Independent Study in Architectural Computation**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Computation Staff*

**4.593 Independent Study in Architectural Computation**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Computation Staff*

**4.594 Independent Study in Architectural Computation**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*Computation Staff*

**4.S50 Special Subject: Architectural Computation**

Prereq: None

U (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Computation Staff*

**4.S51 Special Subject: Architectural Computation**

Prereq: None

U (Spring; first half of term)

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Computation Staff*

**4.S52 Special Subject: Architectural Computation**

Prereq: Permission of instructor

G (Spring; second half of term)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*T. Knight*

**4.S53 Special Subject: Architectural Computation**

Prereq: Permission of instructor

G (IAP)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Computation Staff*

**4.554 Special Subject: Architectural Computation**

Prereq: Permission of instructor

G (IAP)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Computation Staff*

**4.555 Special Subject: Digital Fabrication**

Prereq: Permission of instructor

G (IAP, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Consult Computation Staff*

**4.556 Special Subject: Shape Grammars**

Prereq: Permission of instructor

G (Fall, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in computation and design that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*Computation Staff*

**History, Theory and Criticism of Architecture and Art****4.601 Introduction to Art History**

Prereq: None

Acad Year 2025-2026: U (Fall)

Acad Year 2026-2027: Not offered

4-0-8 units. HASS-A

Introduction to the history and interpretation of western art in a global context that explores painting, graphic arts and sculpture from the 15th century to the present. Engages diverse methodological perspectives to examine changing conceptions of art and the artist, and to investigate the plural meaning of artworks within the larger contexts of culture and history.

*Consult K. Smentek*

**4.602 Modern Art and Mass Culture**

Subject meets with 4.652

Prereq: None

U (Spring)

4-0-8 units. HASS-A; CI-H

Introduction to theories of modernism and postmodernism and their related forms (roughly 18th century to present) in art and design. Focuses on how artists use the tension between fine art and mass culture to critique both. Examines visual art in a range of genres, from painting to design objects and "relational aesthetics." Works of art are viewed in their interaction with advertising, caricature, comics, graffiti, television, fashion, "primitive" art, propaganda, and networks on the internet. Additional work required of students taking graduate version.

*Consult C. Jones*

**4.603 Understanding Modern Architecture**

Subject meets with 4.604

Prereq: None

U (Fall)

3-0-9 units. HASS-A

Examines modern architecture, art, and design in the context of the political, economic, aesthetic, and cultural changes that occurred in the twentieth century. Presents foundational debates about social and technological aspects of modern architecture and the continuation of those debates into contemporary architecture. Incorporates varied techniques of historical and theoretical analysis to interpret exemplary objects, buildings, and cities of modernity. Additional work required of students taking the graduate version. Preference to Course 4 majors and minors.

*T. Hyde*

#### **4.604 Understanding Modern Architecture**

Subject meets with 4.603  
Prereq: Permission of instructor  
G (Fall)  
Units arranged

Examines modern architecture, art, and design in the context of the political, economic, aesthetic, and cultural changes that occurred in the twentieth century. Presents foundational debates about social and technological aspects of modern architecture and the continuation of those debates into contemporary architecture. Incorporates varied techniques of historical and theoretical analysis to interpret exemplary objects, buildings, and cities of modernity. Additional work required of students taking the graduate version. Preference to Course 4 majors.

*T. Hyde*

#### **4.605 A Global History of Architecture**

Subject meets with 4.650  
Prereq: None  
U (Spring)  
4-0-8 units. HASS-A

Provides an outline of the history of architecture and urbanism from ancient times to the early modern period. Analyzes buildings as the products of culture and in relation to the special problems of architectural design. Stresses the geopolitical context of buildings and in the process familiarizes students with buildings, sites and cities from around the world. Additional work required of graduate students.

*Consult M. Jarzombek*

#### **4.606 Environmental Histories of Architecture**

Subject meets with 4.656  
Prereq: None  
U (Spring)  
3-0-9 units. HASS-H

Drawing on case studies from the ancient world to the present day, considers how the creation of architecture has involved the modification of natural environments and climates and the exploitation of resources across the globe. Investigates the metabolic processes of raw material extraction, transportation, and manipulation that make the creation of buildings, infrastructures, and designed landscapes possible. Explores how material and climatic considerations have played into the design and aesthetics of buildings at various points in time and promotes an awareness of the largely invisible, increasingly far-flung networks of environmental management and labor that underpin our built environment. Students taking graduate version complete additional assignments. Limited to 25 for versions meeting together; preference to undergraduates.

*H. Gupta, C. Murphy*

#### **4.607 Thinking About Architecture: In History and At Present**

Prereq: 4.645 or permission of instructor  
Acad Year 2025-2026: Not offered  
Acad Year 2026-2027: G (Fall)  
Units arranged

Studies the interrelationship of theory, history, and practice. Looks at theory not as specialized discourse relating only to architecture, but as touching on many issues, whether they be cultural, aesthetic, philosophical, or professional. Topics and examples are chosen from a wide range of materials, from classical antiquity to today.

*M. Jarzombek*

#### **4.608 Seminar in the History of Art, Architecture, and Design**

Subject meets with 4.609  
Prereq: Permission of instructor  
Acad Year 2025-2026: Not offered  
Acad Year 2026-2027: G (Spring)  
Units arranged  
Can be repeated for credit.

Examination of historical method in art, design, and/or architecture, focusing on periods and problems determined by the research interest of the faculty member leading the seminar. Emphasizes critical reading and viewing and direct tutorial guidance. Additional work required of students taking the graduate version. Limited to 15.  
*Consult K. Smentek*

#### **4.609 Seminar in the History of Art, Architecture, and Design**

Subject meets with 4.608  
Prereq: Permission of instructor  
Acad Year 2025-2026: Not offered  
Acad Year 2026-2027: U (Spring)  
3-0-9 units. HASS-A  
Can be repeated for credit.

Examination of historical method in art, design, and/or architecture, focusing on periods and problems determined by the research interest of the faculty member leading the seminar. Emphasizes critical reading and viewing and direct tutorial guidance. Additional work required of students taking the graduate version. Limited to 15.  
*Consult K. Smentek*

**4.612 Islamic Architecture and the Environment**

Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 Units arranged

Studies how Islamic architecture, landscape architecture, and urban planning reflect and transform environmental processes in various regions and climates of the Islamic world, from Andalusia to Southeast Asia, with an emphasis on South Asia, Central Asia, and the Middle East. Using systematic approaches to environmental data collection and analysis, examines strategies behind the design of selected architectural elements and landscape design types, ranging in scale from the fountain to the garden, courtyard, city, and agrarian region. Critically explores cultural interpretations of Islamic environmental design (e.g., paradise gardens), as they developed over time in ways that enrich, modify, or obscure their historical significance.

*Consult H. Gupta*

**4.613 Designing Nature**

Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 3-0-9 units

Explores ideas about the design of nature in the early modern period (ca. 1450–1800), primarily in Europe and its global contact zones. Studies efforts from this period to categorize, analyze, and transform environments to meet the demands of scientific inquiry and political economy, through historical case studies in environmental, landscape, engineering, and architectural history. Traces the origins of modern notions of growth, development, improvement, and capitalism, and their legacies in contemporary landscapes and economic systems.

*Consult C. Murphy*

**4.614 Introduction to Islamic Architecture**

Prereq: None  
 U (Fall)  
 3-0-9 units. HASS-A

Examines the history of Islamic architecture spanning fifteen centuries on three continents – Asia, Africa, Europe. Students study representative examples from the 7th century House of the Prophet to the current high-rises of Dubai, in conjunction with their religious, urban, social, political, and intellectual environments. Crosscultural exchanges are highlighted from late Antique Arabia down to the interaction with the West in the age of colonialism and the consequent revival of Islamic architecture today.

*Consult N. Rabbat*

**4.615 The Architectures of Water**

Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 3-0-9 units

Explores how human-water interactions have given shape to the built environment in the era before industrialization, focusing on architectures, infrastructures, and landscapes of water supply, irrigation, transport, energy, ritual, health, sanitation, and flood mitigation, among other functions. Introduces examples from across the globe, with an emphasis on the Mediterranean world and Europe during the Middle Ages and early modern period (ca. 1000–1750). Considers continuity and change in historical water management over the *«longue durée»* and its effects on contemporary cities, landscapes, and political and economic systems.

*Consult C. Murphy*

**4.616 Culture and Architecture**

Prereq: Permission of instructor  
 G (Spring)  
 Units arranged

Seminar on the complex relation between architecture and culture. Analyzes architecture as a conveyor of messages that transcend stylistic, formal, and iconographic concerns to include an assessment of historiographical, political, ideological, social, and cultural factors. Critically reviews methodologies and theoretical premises of studies on culture and meaning. Focuses on examples from Islamic history and establishes historical and theoretical frameworks for investigation. Limited to 16.

*Consult N. Rabbat*

**4.617 Advanced Study in Islamic Urban History**

Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 Units arranged

Seminar on selected topics from the history of Islamic urbanism. Examines patterns of settlement, urbanization, and architectural production in various places and periods, ranging from the formative period in the 7th century to the new cities emerging today in Asia and Africa. Discusses the leading factors in shaping and transforming urban forms, design imperatives, cultural and economic structures, and social and civic attitudes. Critically analyzes the body of literature on Islamic urbanism. Research paper required. Limited to 12.

*Consult N. Rabbat*

**4.619 Historiography of Islamic Art and Architecture**

Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 3-0-9 units

Critical review of literature on Islamic art and architecture in the last two centuries. Analyzes the cultural, disciplinary, and theoretical contours of the field and highlights the major figures that have influenced its evolution. Challenges the tacit assumptions and biases of standard studies of Islamic art and architecture and addresses historiographic and critical questions concerning how knowledge of a field is defined, produced, and reproduced. Limited to 12.

*Consult N. Rabbat*

**4.621 Orientalism, Colonialism, and Representation**

Prereq: Permission of instructor  
 Acad Year 2025-2026: G (Fall)  
 Acad Year 2026-2027: Not offered  
 Units arranged

Seminar on the politics of representation with special focus on Orientalist traditions in architecture, art, literature, and scholarship. Critically analyzes pivotal texts, projects, and artworks that reflect the encounters between the West and the Orient from Antiquity to the present. Discusses how political, ideological, and religious attitudes inform the construction and reproduction of Western knowledge about the Islamic world. Research paper required. Open to qualified undergraduates. Limited to 16.

*Consult N. Rabbat*

**4.622 Archive Fever: Theory and Method**

Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 3-0-9 units

Focuses on how artists, archivists, architects, and historians have dealt with the archival turn — from archives being used as "source" to becoming a "subject" of critical inquiry. Addresses the philosophical underpinnings of writing history and its changing relationships with the archive across millennia, from Mesopotamian "archive rooms" filled with cuneiform inscriptions to the post-revolutionary foundation of the French national archives. Instruction provided in interpreting and triangulating primary sources such as documents, maps, photographs, drawings, correspondence, and archive-based artworks. Through firsthand archival research, students develop a reflexive methodology for their own research and practice.

*Consult H. Gupta*

**4.624 Dwelling & Building: Cities in the Global South**

Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 Units arranged

Examines the contemporary challenges and history of city planning on three continents - Africa, Asia, and South America. Students study a number of city plans, from the 'informal' settlements of Delhi and Nairobi, the modernist master plans of Brasilia and Baghdad, to climate action plans in various cities. Explores the relationship between dwelling and building in the design of cities, in conjunction with the environmental, social, political, and intellectual environments at the time of their planning. Open to both undergraduate and graduate students. MArch students can register for 9 credits.

*Consult H. Gupta*

**4.634 Early Modern Architecture and Art**

Subject meets with 4.635  
 Prereq: None  
 G (Spring)  
 Not offered regularly; consult department  
 Units arranged

Presents a history, from the 14th through the early 17th century, of architectural practice and design, as well as visual culture in Europe with an emphasis on Italy. Topics include the production and reception of buildings and artworks; the significance of a reinvigorated interest in antiquity; and representation of the individual, the state, and other institutions. Examines a variety of interpretive methods. Graduate students are expected to complete additional assignments.

*HTC Staff*

**4.635 Early Modern Architecture and Art**

Subject meets with 4.634  
 Prereq: None  
 U (Spring)  
 Not offered regularly; consult department  
 3-0-9 units. HASS-A

Presents a history, from the 14th through the early 17th century, of architectural practice and design, as well as visual culture in Europe with an emphasis on Italy. Topics include the production and reception of buildings and artworks; the significance of a reinvigorated interest in antiquity; and representation of the individual, the state, and other institutions. Examines a variety of interpretive methods. Graduate students are expected to complete additional assignments.

*HTC Staff*

**4.636 Topics in European Medieval Architecture and Art**

Subject meets with 4.637

Prereq: None

U (Spring)

Not offered regularly; consult department

3-0-9 units. HASS-A

Investigates architecture and art in medieval Europe, including significant monuments, art objects, themes, and developments from late antiquity through the rise of European cities in the 13th century. Considers a variety of media, ranging from stone- and metalwork to parchment and glass. Topics include sacred places and spaces; pilgrimage; relics and souvenirs; iconoclasm; questions of materiality, agency, and the power associated with objects; nature and magic; visions; medieval conceptions of temporality; and the construct of feudalism. Students taking graduate version complete additional assignments.

*Consult C. Murphy*

**4.637 Topics in European Medieval Architecture and Art**

Subject meets with 4.636

Prereq: None

G (Spring)

Not offered regularly; consult department

Units arranged

Investigates architecture and art in medieval Europe, including significant monuments, art objects, themes, and developments from late antiquity through the rise of European cities in the 13th century. Considers a variety of media, ranging from stone- and metalwork to parchment and glass. Topics include sacred places and spaces; pilgrimage; relics and souvenirs; iconoclasm; questions of materiality, agency, and the power associated with objects; nature and magic; visions; medieval conceptions of temporality; and the construct of feudalism. Students taking graduate version complete additional assignments.

*Consult C. Murphy*

**4.640 Advanced Study in Critical Theory of Architecture**

Prereq: Permission of instructor

G (Fall, Spring)

Units arranged

Can be repeated for credit.

Seminar on a selected topic in critical theory. Requires original research and presentation of oral and written report.

*Consult A. Dutta*

**4.641 19th-Century Art: Painting in the Age of Steam**

Subject meets with 4.644

Prereq: None

Acad Year 2025-2026: U (Fall)

Acad Year 2026-2027: Not offered

3-0-9 units. HASS-A

Investigation of visual culture in the nineteenth century with an emphasis on Western Europe, the United States, and Japan. Topics include art and industry, artists and urban experience, empire and its image, and artistic responses to new technologies from the telegraph to the steam engine to the great refractor telescope. Strikes a balance between historical and contemporary critical perspectives to assess art's engagement with the social and political experience of modernity. Additional work required of students taking the graduate version. Limited to 15.

*Consult K. Smentek*

**4.644 19th-Century Art: Painting in the Age of Steam**

Subject meets with 4.641

Prereq: None

Acad Year 2025-2026: G (Fall)

Acad Year 2026-2027: Not offered

Units arranged

Investigation of visual culture in the nineteenth century with an emphasis on Western Europe, the United States, and Japan. Topics include art and industry, artists and urban experience, empire and its image, and artistic responses to new technologies from the telegraph to the steam engine to the great refractor telescope. Strikes a balance between historical and contemporary critical perspectives to assess art's engagement with the social and political experience of modernity. Additional work required of students taking the graduate version. Limited to 15.

*Consult K. Smentek*

**4.645 Selected Topics in Architecture: 1750 to the Present**

Prereq: 4.210 or permission of instructor

G (Spring)

3-0-6 units

General study of modern architecture as a response to important technological, cultural, environmental, aesthetic, and theoretical challenges after the European Enlightenment. Focus on the theoretical, historiographic, and design approaches to architectural problems encountered in the age of industrial and post-industrial expansion across the globe, with specific attention to the dominance of European modernism in setting the agenda for the discourse of a global modernity at large. Explores modern architectural history through thematic exposition rather than as simple chronological succession of ideas.

*A. Dutta*

**4.646 Advanced Study in the History of Modern Architecture and Urbanism**

Prereq: Permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Spring)  
 Units arranged  
 Can be repeated for credit.

Seminar in a selected topic in the history of modern architecture and urbanism. Oral presentations and research paper required.  
*T. Hyde*

**4.647 Technopolitics, Culture, Intervention**

Prereq: 4.645 or permission of instructor  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall)  
 Units arranged

Examines the manner in which key theories of technology have influenced architectural and art production in terms of their "humanizing" claims. Students test theories of technology on the grounds of whether technology is good or bad for humans. Limited to 15; preference to MArch students.  
*A. Dutta*

**4.648[J] Resonance: Sonic Experience, Science, and Art**

Same subject as 21A.507[J]  
 Subject meets with 4.649[J], 21A.519[J]  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: U (Fall, Spring)  
 3-0-9 units. HASS-A

Examines the sonic phenomena and experiences that motivate scientific, humanistic, and artistic practices. Explores the aesthetic and technical aspects of how we hear; measure or describe vibrations; record, compress, and distribute resonating materials; and how we ascertain what we know about the world through sound. Although the focus is on sound as an aesthetic, social, and scientific object, the subject also investigates how resonance is used in the analysis of acoustics, architecture, and music theory. Students make a sonic artifact and written report reflecting research as a final requirement. Students taking graduate version complete assignments aligned with their graduate research.  
*Consult C. Jones*

**4.649[J] Resonance: Sonic Experience, Science, and Art**

Same subject as 21A.519[J]  
 Subject meets with 4.648[J], 21A.507[J]  
 Prereq: None  
 Acad Year 2025-2026: Not offered  
 Acad Year 2026-2027: G (Fall, Spring)  
 3-0-9 units

Examines the sonic phenomena and experiences that motivate scientific, humanistic, and artistic practices. Explores the aesthetic and technical aspects of how we hear; measure or describe vibrations; record, compress, and distribute resonating materials; and how we ascertain what we know about the world through sound. Although the focus is on sound as an aesthetic, social, and scientific object, the subject also investigates how resonance is used in the analysis of acoustics, architecture, and music theory. Students make a sonic artifact and written report reflecting research as a final requirement. Students taking graduate version complete assignments aligned with their graduate research.  
*Consult C. Jones*

**4.650 A Global History of Architecture**

Subject meets with 4.605  
 Prereq: None  
 G (Spring)  
 4-0-8 units

Provides an outline of the history of architecture and urbanism from ancient times to the early modern period. Analyzes buildings as the products of culture and in relation to the special problems of architectural design. Stresses the geopolitical context of buildings and in the process familiarizes students with buildings, sites and cities from around the world. Additional work required of graduate students.  
*M. Jarzombek*

**4.651 Art Since 1940**

Prereq: None  
 U (Spring)  
 Not offered regularly; consult department  
 3-0-9 units. HASS-A

Critical examination of major developments in European, Asian, and American art from 1940 to the present. Surveys the mainstream of art production but also examines marginal phenomena (feminism, identity politics, AIDS activism, net art) that come to change the terms of art's engagements with civic culture. Visits to area art museums and writing assignments develop skills for visual analysis and critical writing.  
*Consult C. Jones*

**4.652 Modern Art and Mass Culture**

Subject meets with 4.602

Prereq: None

Acad Year 2025-2026: G (Spring)

Acad Year 2026-2027: Not offered

Units arranged

Introduction to theories of modernism and postmodernism and their related forms (roughly 18th century to present) in art and design. Focuses on how artists use the tension between fine art and mass culture to critique both. Examines visual art in a range of genres, from painting to design objects and "relational aesthetics." Works of art are viewed in their interaction with advertising, caricature, comics, graffiti, television, fashion, "primitive" art, propaganda, and networks on the internet. Additional work required of students taking the graduate version.

*C. Jones*

**4.654 Media Theory**

Prereq: None

G (Spring)

Not offered regularly; consult department

Units arranged

Examines historical positions in what has been known as "media theory," engaging the tensions that vex current modes of production. Explores the broad panoply of bottom-up media content generation in its confrontation with proprietary media platforms, and measures contemporary digital narrative forms against the expanded cinematic theories of the past. Discussions focus on how the rich literature of media theory might accommodate gaming, XR, interactive immersive installations, and other contemporary phantasmagoria.

*Consult C. Jones, E. Brinkema*

**4.656 Environmental Histories of Architecture (New)**

Subject meets with 4.606

Prereq: None

G (Spring)

3-0-6 units

Drawing on case studies from the ancient world to the present day, considers how the creation of architecture has involved the modification of natural environments and climates and the exploitation of resources across the globe. Investigates the metabolic processes of raw material extraction, transportation, and manipulation that make the creation of buildings, infrastructures, and designed landscapes possible. Explores how material and climatic considerations have played into the design and aesthetics of buildings at various points in time and promotes an awareness of the largely invisible, increasingly far-flung networks of environmental management and labor that underpin our built environment. Students taking graduate version complete additional assignments. Limited to 25 for versions meeting together; preference to undergraduates.

*H. Gupta, C. Murphy*

**4.657 Design: The History of Making Things**

Prereq: None

U (Spring)

5-0-7 units. HASS-A; CI-H

Examines themes in the history of design, with emphasis on Euro-American theory and practice in their global contexts. Addresses the historical design of communications, objects, and environments as meaningful processes of decision-making, adaptation, and innovation. Critically assesses the dynamic interaction of design with politics, economics, technology, and culture in the past and at present. Limited to 36.

*T. Hyde, K. Smentek*

**4.661 Theory and Method in the Study of Architecture and Art**

Prereq: Permission of instructor

G (Fall)

3-0-9 units

Can be repeated for credit.

Studies theoretical and historiographical works pertaining to the fields of art and architectural history. Members of seminar pursue work designed to examine their own presuppositions and methods. Preference to PhD and other advanced students.

*Consult K. Smentek*

**4.674[[]] French Photography**

Same subject as 21G.049[[]], 21H.145[[]]

Prereq: None

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: U (Fall)

3-0-9 units. HASS-A; CI-H

See description under subject 21H.145[[]]. Enrollment limited.

*C. Clark*

**4.675 Collect, Classify, Consume**

Prereq: None

G (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Historical study of collecting from the Renaissance to the present.

Addresses the practices of collecting and display at the both the individual and institutional level, and analyzes their social, aesthetic, scientific, political and economic dimensions. Specific themes vary from year to year. Offered for 9 or 12 units. May be repeated for credit with permission of instructor. Limited to 15.

*Consult K. Smentek*

**4.677 Advanced Study in the History of Art**

Prereq: Permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Fall)

Units arranged

Can be repeated for credit.

Seminar in a selected topic in the history of art, with a particular emphasis on developments from the 18th century to the present. Includes short field trips to museums and collections. Oral presentations and research paper required. Offered for 9 or 12 units. Limited to 15.

*Consult K. Smentek*

**4.684 Preparation for HTC Major Exam**

Prereq: Permission of instructor

G (Fall, Spring)

1-0-26 units

Required of doctoral students in HTC as a prerequisite for work on the doctoral dissertation. The Major Exam covers a historically broad area of interest and includes components of history, historiography, and theory. Preparation for the exam will focus on four or five themes agreed upon in advance by the student and the examiner, and are defined by their area of teaching interest. Work is done in consultation with HTC faculty, in accordance with the HTC PhD Degree Program Guidelines. Restricted to HTC PhD students.

*Information: HTC Staff*

**4.685 Preparation for HTC Minor Exam**

Prereq: Permission of instructor

G (Fall, Spring)

1-0-14 units

Required of doctoral students in HTC as a prerequisite for work on the doctoral dissertation. The Minor Exam focuses on a specific area of specialization through which the student might develop their particular zone of expertise. Work is done in consultation with HTC faculty, in accordance with the HTC PhD Degree Program Guidelines. Restricted to HTC PhD students.

*Information: HTC Staff*

**4.686 SMArchS AKPIA Pre-Thesis Preparation**

Prereq: 4.221 and (4.619 or 4.621)

G (Spring)

0-1-2 units

Preliminary study in preparation for the thesis for the SMArchS degree in the Aga Khan Program for Islamic Architecture. Topics include literature search, precedents examination, thesis structure and typologies, and short writing exercise.

*Consult N. Rabbat*

**4.687 SMArchS HTC Pre-Thesis Preparation**

Prereq: 4.221 and 4.661

G (Spring)

0-1-2 units

Preliminary study in preparation for the thesis for the SMArchS degree in History, Theory and Criticism. Topics include literature search, precedents examination, thesis structure and typologies, and short writing exercise.

*Consult K. Smentek*

**4.689 Preparation for History, Theory, and Criticism - Ph.D. Thesis**

Prereq: Permission of instructor

G (Fall, IAP, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Required for doctoral students in HTC as a prerequisite for work on the doctoral dissertation. Prior to candidacy, doctoral students are required to write and orally defend a proposal laying out the scope of their thesis, its significance, a survey of existing research and literature, the methods of research to be adopted, a bibliography and plan of work. Work is done in consultation with HTC Faculty, in accordance with the HTC PhD Degree Program guidelines. Restricted to HTC PhD students.

*Consult HTC Staff*

**4.691 Independent Study in the History, Theory, and Criticism of Architecture and Art**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*HTC Staff*

**4.692 Independent Study in the History, Theory, and Criticism of Architecture and Art**

Prereq: Permission of instructor

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual or group basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*HTC Staff*

**4.693 Independent Study in the History, Theory, and Criticism of Architecture and Art**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*HTC Staff*

**4.694 Independent Study in the History, Theory, and Criticism of Architecture and Art**

Prereq: Permission of instructor

G (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

Supplementary work on individual basis. Registration subject to prior arrangement for subject matter and supervision by staff.

*HTC Staff*

**4.S60 Special Subject: History, Theory and Criticism of Architecture and Art**

Prereq: None

U (Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of architecture and art that is not covered in the regular curriculum.

Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*HTC Staff*

**4.S61 Special Subject: History, Theory and Criticism of Architecture and Art**

Prereq: None

U (IAP, Spring)

Not offered regularly; consult department

Units arranged [P/D/F]

Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of architecture and art that is not covered in the regular curriculum.

Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*HTC Staff*

**4.S62 Special Subject: History, Theory and Criticism of Architecture and Art**

Prereq: Permission of instructor

Acad Year 2025-2026: Not offered

Acad Year 2026-2027: G (Spring)

Units arranged

Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of architecture and art that is not covered in the regular curriculum.

Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.

*C. Jones*

**4.S63 Special Subject: History, Theory and Criticism of Architecture and Art**

Prereq: Permission of instructor  
G (Spring)  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of architecture and art that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*HTC Staff*

**4.S64 Special Subject: History, Theory and Criticism of Architecture and Art**

Prereq: Permission of instructor  
G (Fall)  
Not offered regularly; consult department  
Units arranged [P/D/F]  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of architecture and art that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*HTC Staff*

**4.S65 Special Subject: Advanced Study in Islamic Architecture**

Prereq: Permission of instructor  
G (Fall)  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in Islamic or non-western architecture that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports, varying at the discretion of the instructor.  
*HTC Staff*

**4.S66 Special Subject: History, Theory and Criticism of Art**

Prereq: Permission of instructor  
G (Fall)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of art that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*HTC Staff*

**4.S67 Special Subject: Study in Modern Art**

Prereq: Permission of instructor  
G (Spring)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of modern art that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*Staff*

**4.S68 Special Subject: Study in Modern Architecture**

Prereq: Permission of instructor  
G (Spring)  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of modern architecture that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*Consult HTC Staff*

**4.S69 Special Subject: Advanced Study in the History of Urban Form**

Prereq: Permission of instructor  
G (Fall)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.

Seminar or lecture on a topic in the history, theory and criticism of urban form that is not covered in the regular curriculum. Requires original research and presentation of oral and written reports and/or design projects, varying at the discretion of the instructor.  
*HTC Staff*

**Thesis and UROP**

***Graduate Subjects***

**4.THG Graduate Thesis**

Prereq: Permission of instructor  
G (Fall, IAP, Spring, Summer)  
Units arranged  
Can be repeated for credit.

Program of research and writing of thesis; to be arranged by the student with supervising committee.  
*Staff*

### ***Undergraduate Subjects***

#### **4.THT[JJ] Thesis Research Design Seminar**

Same subject as 11.THT[JJ]

Prereq: None

U (Fall)

3-0-9 units

Can be repeated for credit.

See description under subject 11.THT[JJ].

*C. Abbanat*

#### **4.THU Undergraduate Thesis**

Prereq: 11.THT[JJ]

U (Fall, IAP, Spring, Summer)

Units arranged

Can be repeated for credit.

Program of thesis research leading to the writing of an SB thesis, to be arranged by the student and an appropriate MIT faculty member. Intended for seniors. 12 units recommended.

*Consult Architecture Staff*

#### **4.UR Undergraduate Research in Design**

Prereq: Permission of instructor

U (Fall, IAP, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Research and project activities, which cover the range represented by the various research interests and projects in the Department.

*Consult S. Tibbits*

#### **4.URG Undergraduate Research in Design**

Prereq: None

U (Fall, IAP, Spring, Summer)

Units arranged

Can be repeated for credit.

Research and project activities, which cover the range represented by the various research interests and projects in the department. Students who wish a letter grade option for their work must register for 4.URG.

*Consult S. Tibbits*