Preparatory subjects for thesis are listed within each of the disciplinary headings of the subject listing. For specific requirements in a degree program, consult the department's website.

**ARCHITECTURE DESIGN**

4.021 Introduction to Architecture Design (4.111)
Prereq: None
U (Fall)
3-3-6 HASS-A
Credit cannot also be received for 4.02A
Provides an introduction to the architecture design process. Develops skills that enable design creativity, thinking, representation, and development. Beginning with abstract exercises, introduces techniques for designing and developing 2-dimensional and 3-dimensional form and space in architecture.
Architecture Design Staff

4.022 Architecture Design Foundations (4.112)
Prereq: None
U (Spring)
3-3-6
Provides the foundations for architectural design. Focuses on design methodologies, formal and spatial analysis and the translation of creative conceptual strategies into architectural design propositions. Instruction in design skills, including digital and analogue representational techniques. Preference to Course 4 majors and minors.
Architecture Design Staff

4.023 Architecture Design Studio I (4.114)
Prereq: 4.021, 4.022
U (Fall)
0-12-12
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.
Architecture Design Staff

4.024 Architecture Design Studio II (4.115)
Prereq: 4.023, 4.401, 4.500
U (Spring)
0-12-12
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.
Architecture Design Staff

4.025 Architecture Design Studio III (4.116)
Prereq: 4.024, 4.440
U (Fall)
0-12-12
Provides instruction in more advanced architectural design projects. Students develop integrated design skills as they negotiate the complex issues of program, site, and form in a specific cultural context. Focuses on how architectural concepts and ideas translate into built environments that transform the public sphere. Studio designed to prepare students for graduate studies in the field. Preference to Course 4 majors.
Architecture Design Staff

4.02A Introduction to Architecture Design Intensive (4.11A)
Prereq: None
U (IAP)
2-5-2
Provides an introduction to the architecture design process. Develops skills that enable design creativity, thinking, representation, and development. Beginning with abstract exercises, introduces techniques for designing and developing 2-dimensional and 3-dimensional form and space in architecture.
Architecture Design Staff

4.100 Architecture Workshop: Form and Material
Prereq: None
U (IAP)
3-0-0 [P/D/F]
Intensive design and fabrication workshop in which students create models and half-size prototypes that explore the characteristics of concrete and wood. Examines the behavior of these materials and their inherent structural qualities. Studies how architectural detail can impact the perception and creation of larger built structures and environments. Lab fee. Limited to 15; preference to freshmen.
Architecture Design Staff

4.105 Geometric Disciplines and Architecture Skills I
Prereq: Permission of instructor
G (Fall)
2-2-5
Intensive introduction to architectural design tools and process, taught through a series of short exercises. Together with 4.107, covers a broad range of topics relating to the discourse of geometry as the basis of architectural design process. Focuses on projective drawings, explicit 3-D modeling, and the reciprocity between representation and materialization. Lectures, workshops, and pin-ups address the architectural arguments intrinsic to geometry and its representation. Restricted to level one MArch students.
J. Lamere

4.107 Geometric Disciplines and Architecture Skills II
Prereq: 4.105
G (Spring)
2-2-5
Intensive investigation of advanced architectural design tools and process, taught through a series of progressive exercises. Together with 4.105, covers a broad range of topics relating to the discourse of geometry as the basis of architectural design process. Focuses on contemporary digital modeling tools, including parametric and solver-based modeling and their relationship to digital fabrication. Lectures, workshops, and pin-ups address the architectural implications of simulations and innovative
means of making. Restricted to first-year MArch students.
B. Clifford

4.109 Shop for Architects
Prereq: 4.151 or permission of instructor
G (IAP)
0-3-6

Provides students with the tools for developing complex geometries from flat components. Students learn precision handwork to multi-axis computer numerically controlled (CNC) machining on a variety of materials used in architecture modeling. They will develop and build an installation to be displayed on campus as a way of examining a variety of architectural issues, such as the interaction between occupant and space. Preference to first-year MArch students.
N. Oxman, J. M. Yoon

4.110j Design Across Scales, Disciplines and Problem Contexts
(Same subject as MAS.330j)
(Subject meets with MAS.650)
Prereq: None
U (Spring)
2-2-8 HASS-A

Explores the reciprocal relationships among design, science, and technology across scales. Covers a wide range of topics, from visualization, fabrication, computation, material ecology, interaction, and architecture to games and performance. Examines how transformations in science and technology have influenced design thinking and vice versa. Students collaborate on interdisciplinary design projects and creative opportunities. Additional work is required of students taking the graduate version of the subject.
N. Oxman, J. M. Yoon

4.113 Architecture Design Fundamentals II
Prereq: 4.111 or 4.11A; 4.112
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: U (Spring)
3-6-6

Focuses on the translation of conceptual strategies of form and space into more complex design propositions that engage a larger set of architectural issues, including technological, social, cultural, experiential and environmental determinants. Students work on the integration of architecture with program, structure, materiality, and site. Preference to Course 4 majors and minors.
Architecture Design Staff

4.119 Preparation for Undergraduate Architecture Design Thesis
Prereq: 4.024
U (Fall)
1-0-2

Selection of thesis topic, defining method of approach, and preparation of thesis proposal for BSA degree in architecture. Weekly class meeting as well as individual conference with faculty.
Architecture Design Staff

4.120 Furniture Making Workshop
Prereq: Permission of instructor
G (Spring)
2-2-5

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. Limited to 12 students.
C. Dewart, J. Lavallee

4.130 Architectural Design Theory and Methodologies
Prereq: Permission of instructor
G (Fall)
3-3-6
Can be repeated for credit with permission of instructor

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.
A. Miljacki

4.140j How to Make (Almost) Anything
(Same subject as MAS.863j)
Prereq: Permission of instructor
G (Fall)
3-9-0 H-LEVEL Grad Credit
See description under subject MAS.863j.
N. Gershenfeld, J. DiFrancesco, S. Tibbits

4.151 Architecture Design Core Studio I
Prereq: Permission of instructor
G (Fall)
0-12-9

Establishes foundational processes, techniques and attitudes towards architectural design. Includes projects of increasing scope and complexity engaging issues of structure, circulation, program, organization, building systems, materiality and tectonics. Develops methods of representation that incorporate both analogue and digital drawings and models. Must be taken in sequence. Limited to first-year MArch students.
Architecture Design Staff

4.152 Architecture Design Core Studio II
Prereq: 4.151
G (Spring)
0-12-9

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.
Architecture Design Staff

4.153 Architecture Design Core Studio III
Prereq: 4.152
G (Fall)
0-12-9 H-LEVEL Grad Credit

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.
Architecture Design Staff

4.154 Architecture Design Option Studio
Prereq: 4.145 or 4.153
G (Fall, Spring)
0-10-11 H-LEVEL Grad Credit
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,
4.162 Introductory Urban Design Studio
Prereq: Permission of instructor
G (Fall)
0-10-11 H-LEVEL Grad Credit
Can be repeated for credit
Project-based introduction to urban observation, research, analysis, and design. Focuses on urban elements, urban and architectural interventions, and landscapes in existing cities. Emphasizes city form, sustainability, and social conditions. Projects require both conventional and digital techniques. Preference to Urbanism SArch S students.

Architecture Design Staff

4.163J Urban Design Studio
(Same subject as 11.332J)
Prereq: 4.145, 4.162, or permission of instructor
G (Fall, Spring)
Units arranged H-LEVEL Grad Credit
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.

Architecture Design Staff

4.166 Beijing Urban Design Studio
(Subject meets with 11.307)
Prereq: Permission of instructor
Acad Year 2014–2015: G (Fall)
Acad Year 2015–2016: Not offered
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
Design and development studio that involves architects and planners, working in teams on a contemporary design project of importance in Beijing, China. Students analyze conditions, explore alternatives, and synthesize architecture, city design, and implementation plans. Supplemented by lectures and brief study tours that expose students to history and contemporary issues of urbanism in China. Offered every other summer in residence at Tsinghua University, Beijing, involving students and faculty from both schools. Limited to 10.

D. Frenchman, J. Wampler

4.170 International Architecture Design Workshop
Prereq: Permission of instructor
U (Fall)
3-2-7
Can be repeated for credit
Interactive design research in developing areas outside of the USA. Assist in drawing, modeling and constructing small buildings appropriate for the culture, climate and specific population under consideration.

J. Wampler

4.171 Design Workshop: The Space Between
Prereq: Permission of instructor
G (Fall)
3-2-4 H-LEVEL Grad Credit
Can be repeated for credit
Design research into the space between and the space within buildings and cities. Projects include the development and understanding of existing space in buildings and cities, as well as designing new structures looking at the space first and the object second.

J. Wampler

4.180 Architectural Design Workshop
Prereq: 4.023, 4.113, or permission of instructor
U (Fall, IAP, Spring)
Units arranged
Can be repeated for credit

4.181 Architectural Design Workshop
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.182 Architectural Design Workshop
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.183–4.185 Architectural Design Workshop
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
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.

Architecture Design Staff

4.189 Preparation for MArch Thesis
Prereq: Permission of instructor
G (Fall, Spring, Summer)
3-1-5 H-LEVEL Grad Credit
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.

Architecture Design Staff

4.190 Practical Experience in Architecture
Prereq: Permission of instructor
G (Fall)
0-0-3 [P/D/F]
Practical experience through summer internships secured by the student in the field of architecture, urbanism, digital design, art, or building technology.

Staff

4.191 Independent Study in Architecture Design
Prereq: Permission of instructor
U (Fall, IAP, Spring)
Units arranged
Can be repeated for credit

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

4.193 Independent Study in Architecture Design
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.194 Independent Study in Architecture Design
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged [P/D/F] H-LEVEL Grad Credit
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
ARCHITECTURE

4.211j The Once and Future City
(Same subject as 11.016j)
Prereq: None
U (Spring)
3-0-9 HASS-H; CI-H
See description under subject 11.016j.
A. Spirn

4.213j Ecological Urbanism Seminar
(Same subject as 11.308j)
Prereq: Permission of instructor
G (Fall)
3-0-9 H-LEVEL Grad Credit
See description under subject 11.308j.
A. Spirn

4.214j Water, Landscape and Urban Design
(Same subject as 11.314j)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit

Workshop surveys how water affects the design of buildings, landscapes and cities in aesthetic, functional and symbolic ways. Combines the systematic study of water issues with urban design projects in South Asia and the US. Covers topics such as rainwater harvesting, water use efficiency, wastewater reuse, stormwater management, floodplain design, constructed wetlands, and waterfront development. Students work together to integrate these design concepts at the site, urban, and international scales. Limited to 15.
J. Wescoat

ARCHITECTURE STUDIES

4.210 Precedents in Critical Practice
Prereq: None
G (Fall)
3-0-6
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.
A. Miljacki

4.211j The Once and Future City
(Same subject as 11.016j)
Prereq: None
U (Spring)
3-0-9 HASS-H; CI-H
See description under subject 11.016j.
A. Spirn

4.213j Ecological Urbanism Seminar
(Same subject as 11.308j)
Prereq: Permission of instructor
G (Fall)
3-0-9 H-LEVEL Grad Credit
See description under subject 11.308j.
A. Spirn

4.214j Water, Landscape and Urban Design
(Same subject as 11.314j)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit

Workshop surveys how water affects the design of buildings, landscapes and cities in aesthetic, functional and symbolic ways. Combines the systematic study of water issues with urban design projects in South Asia and the US. Covers topics such as rainwater harvesting, water use efficiency, wastewater reuse, stormwater management, floodplain design, constructed wetlands, and waterfront development. Students work together to integrate these design concepts at the site, urban, and international scales. Limited to 15.
J. Wescoat

4.215j Sensing Place: Photography as Inquiry
(Same subject as 11.309j)
Prereq: None
G (Fall)
3-0-9
See description under subject 11.309j.
A. Spirn

4.216j Landscape and Urban Heritage Conservation
(Same subject as 11.316j)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit

Focuses on cultural landscape history, theory, and heritage issues and projects in the Indo-Islamic realm. Landscape and urban heritage inquiry go beyond monuments to encompass sites, cities, and regions. Combines the study of conservation theory and practice with an exploration of active urban landscape planning and design projects. Limited to 15.
P. Freelon

4.221 Architecture Studies Colloquium
Prereq: Permission of instructor
G (Fall)
2-1-3
Series of open lectures, presented as an introduction to the diverse academic and creative community of MIT and the region, at which discipline groups of the SMArchS program converge and exchange ideas. Organized thematically, guest speakers from cultural and scientific fields present viewpoints in areas of emerging interest within design, building technology, architectural computation, history, and art. Encourages discourse with speakers and among students from different disciplines. Students initiate online debates among their peers and respond to an evolving series of discussions resulting in publication.
Architecture Staff

4.222 Professional Practice
Prereq: Permission of instructor
G (Fall)
3-0-3 H-LEVEL Grad Credit

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.
P. Freelon
4.225 Urban Design Theory
Prereq: Permission of instructor
G (Fall)
3-0-6
Introduces theories, concepts and precedents in urban design. Emphasizes traditional, modern and contemporary values and approaches to urban design. Research projects required. Preference to Urbanism SMArchS students. M. Dennis

4.230j SIGUS Workshop
(Same subject as 11.468j)
(Subject meets with 4.231)
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.231j SIGUS Workshop
(Subject meets with 4.230j, 11.468j)
Prereq: Permission of instructor
U (Fall, IAP, Spring)
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

4.232j The New Global Planning Practitioner
(Same subject as 11.444j)
(Subject meets with 4.233)
Prereq: Permission of instructor
G (Spring)
3-0-6 H-LEVEL Grad Credit
4.233 The New Global Planning Practitioner
(Subject meets with 4.232j, 11.444j)
Prereq: Permission of instructor
U (Spring)
3-0-6
Considers a new interdisciplinary paradigm of practice that regards dialogue among practitioners and users essential for efficacious and creative design and planning process. Focuses on non-traditional client groups: communities, the poor, and the generally excluded middle-income. Explores key issues confronting development practitioners, with stress on practical exercises drawn from current national and international case studies; e.g., an investigative comparison of cities or tools in coping with impending rapid and massive growth and expansion. Engages those with a design and community service orientation. Additional work required of students taking the graduate version. R. Goethert

4.236j Structuring Low-Income Housing Projects in Developing Countries
(Same subject as 11.463j)
Prereq: Permission of instructor
G (Fall)
3-0-9 H-LEVEL Grad Credit
Examines dynamic relationship among key actors: beneficiaries, government, and funder. Emphasis on cost recovery, affordability, replicability, user selection, and project administration. Extensive case examples provide basis for comparisons. R. Goethert

4.240j Urban Design Skills: Observing, Interpreting, and Representing the City
(Same subject as 11.328j)
Prereq: None
G (Fall)
4-2-9
See description under subject 11.328j. S. Gray, M. A. Ocampo

4.241j Theory of City Form
(Same subject as 11.330j)
Prereq: 4.252 or 11.001
G (Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
Covers theories about the form that settlements should take. Attempts a distinction between descriptive and normative theory by examining examples of various theories of city form over time. Concentrates on the origins of the modern city and theories about its emerging form, including the transformation of the 19th-century city and its organization. Analyzes current issues of city form in relation to city-making, social structure, and physical design. R. Goethert

4.244j Urban Design Seminar: New Century Cities
(Same subject as 11.333j)
Prereq: None
G (Spring)
2-0-7
See description under subject 11.333j. D. Frenchman

4.247j Urban Design Ideals and Action
(Same subject as 11.337j)
Prereq: 11.301 or permission of instructor
G (Spring)
2-0-7 H-LEVEL Grad Credit
See description under subject 11.337j. B. Ryan

4.250j Introduction to Urban Design and Development
(Same subject as 11.001j)
Prereq: None
U (Spring)
3-0-9 HASS-H
See description under subject 11.001j. L. Vale

4.252j Introduction to Urban Design and Development
(Same subject as 11.301j)
Prereq: Permission of instructor
G (Fall)
3-0-9
See description under subject 11.301j. R. Goethert

4.253j Urban Design Politics
(Same subject as 11.302j)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
3-0-9 H-LEVEL Grad Credit
See description under subject 11.302j. L. Vale

4.254j Real Estate Development Studio: Complex Urban Projects
(Same subject as 11.303j)
Prereq: Permission of instructor
G (Spring)
6-0-12 H-LEVEL Grad Credit
See description under subject 11.303j. D. Frenchman, P. Roth

4.255j Site and Environmental Systems Planning
(Same subject as 11.301j)
Prereq: Permission of instructor
G (Spring)
6-0-9 H-LEVEL Grad Credit
See description under subject 11.301j. S. Gray, M. A. Ocampo

4.262j Ideal Forms of Contemporary Urbanism
(Same subject as 11.311j)
Prereq: 4.645, 4.241, or permission of instructor
G (Fall)
Units arranged H-LEVEL Grad Credit
Advanced seminar about an architectural approach to the problems of disurbanization. Focuses on texts and projects of a particular lineage of architects and planners, who are pursuing 'metropolitan urbanity' through a series of concrete, discrete, tangible interventions from 1944 to 1999. Studies the organization of flows...
and the articulation of public spaces within various projects seeking a definition of "urbanity" using analytical diagrams. Relates this architectural definition to more theoretical definitions in philosophy and anthropology.

A. D’Hooghe

4.264J Advanced Seminar in Landscape and Urbanism
(Same subject as 11.334J)
Prereq: Permission of instructor
G (Fall)
3-0-9 H-LEVEL Grad Credit
See description under subject 11.334J.
A. Berger

4.274 Design Innovation for Distributed Energy
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
3-0-6 H-LEVEL Grad Credit
Explores design opportunities and technical challenges in the vertical integration of energy sector materials in designs for the built environment. Interdisciplinary design approach enables students to work directly with the selected energy harvesting materials to understand the performance attributes and their application value. Students investigate the spatial, social and environmental impacts of decentralized energy distribution through the development of design proposals and proof-of-concept application prototypes capable of providing measurable results. Engages research faculty outside of the School of Architecture and Planning. Limited to 20.
S. Kennedy

4.280 Undergraduate Architecture Internship
Prereq: 4.022
U (IAP)
Units arranged [P/D/F]
Can be repeated for credit
Students work in an architect’s office to gain experience, improve skills, and see the inner workings of an everyday architectural practice. Internships possible in all sizes of firms and in public and nonprofit agencies. During IAP, a full-time, 4-week internship is required; maximum IAP credit, 6 units.
M. J. Yoon

4.287 Graduate Architecture Internship
Prereq: 4.151
G (IAP)
Units arranged [P/D/F]
Can be repeated for credit
Work in an architect’s office to gain experience, improve skills, and see the inner workings of an everyday architectural practice. Internships possible in all sizes of firms and in public and nonprofit agencies. During IAP, a full-time, 4-week internship is required; maximum IAP credit, 6 units.
M. J. Yoon

4.288 Preparation for SMArchS Thesis
Prereq: Permission of instructor
G (Fall, Spring, Summer)
Units arranged [P/D/F] H-LEVEL Grad Credit
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.Th.G.
Staff

4.291 Independent Study in Architecture Studies
Prereq: Permission of instructor
U (Fall, IAP, Spring)
Units arranged
Can be repeated for credit
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
4.293 Independent Study in Architecture Studies
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
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] H-LEVEL Grad Credit
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 (IAP, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit
4.S21 Special Subject: Architecture Studies
Prereq: None
U (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit
4.S22, 4.S23 Special Subject: Architecture Studies
Prereq: None
U (IAP, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit
See description under subject 11.334J.

4.S24 Special Subject: Architecture Studies
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F] H-LEVEL Grad Credit
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.S25 Special Subject: Urban Housing
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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.
Architecture Staff

4.S26 Special Subject: City Form
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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
ART, CULTURE AND TECHNOLOGY

4.301 Introduction to Artistic Experimentation
Prereq: None
U (Fall, Spring)
3-3-6 HASS-A

Introduction to the historic, cultural and environmental forces that affect both the development of an artistic concept and the reception of a work of art. Explores sculptural, architectural, or performative artistic methods; video and sound art; and site interventions and strategies for artistic engagement in the public realm. Provides experience in artistic practice and critical visual thinking with studio-based projects on two selected scales or in two media. Lectures, screenings, guest presentations, field trips, readings and debates supplement studio practice. Lab fee.
A. Aksamija

4.302 Foundations in Art, Design, and Spatial Practices
Prereq: 4.111, 4.021 or 4.02A
U (Spring)
3-3-6

Offers a foundation in artistic practice and its critical analysis. Emphasizes the development of artistic approaches and methods by drawing analogies to architectural thinking, urbanism, and design practice. Develops skills in communicating ideas and experiences on different scales and through two-dimensional, three-dimensional, time-based media, and new genres. Video screenings, guest lectures, visiting artist presentations, field trips, and readings supplement studio practice. Instruction and practice in written and oral communication provided. Lab fee. Preference to Course 4 majors and minors.
A. Aksamija

4.307 Art, Architecture, and Urbanism in Dialogue
(Subject meets with 4.308)
Prereq: 4.301 or permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: U (Fall)
3-3-6

4.308 Art, Architecture, and Urbanism in Dialogue
(Subject meets with 4.307)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
3-3-6 H-LEVEL Grad Credit

Engages dialogue between architecture, urbanism and contemporary art from the perspective of the artistic field. Thematically investigates ideas from early modernist practices to recent examples of contemporary production and site. Includes examples of artistic practice along with architectural and urban approaches. Focuses on interventions by practitioners who intertwine the three disciplines. Readings provide theoretical background. Lectures, screenings, readings and discussions with guests and faculty lead to the development and realization of group and individual projects for final presentations. Additional work required of students taking the graduate version. Lab fee.
G. Urbonas

4.312 Advanced Studio on the Production of Space
(Subject meets with 4.313)
Prereq: 4.301, 4.302, or permission of instructor
Acad Year 2014–2015: U (Fall)
Acad Year 2015–2016: Not offered
3-3-3 HASS-A
Can be repeated for credit

4.313 Advanced Studio on the Production of Space
(Subject meets with 4.312)
Prereq: Permission of instructor
Acad Year 2014–2015: G (Fall)
Acad Year 2015–2016: Not offered
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit

Introduces historical and contemporary spatial concepts for various cultures and geo-political settings, and examines how they relate to artistic process and production. Explores relational qualities of spatial concepts and reflects on their producers and proponents. Investigates the notion of utopian, dystopian and heterotopian space, inner and outer space, the void, the vacuum, the in-between, and the “real” versus “virtual” space. Screenings, guest speakers from various disciplines, readings and in-class presentations support the development

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 HASS-A
Can be repeated for credit

4.315 Advanced Workshop in Artistic Practice and Transdisciplinary Research
(Subject meets with 4.314)
Prereq: Permission of instructor
G (Fall)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit

Examines artistic practice as a form of critical inquiry and knowledge production. Evaluates models of experimentation, individual research, and collaboration with other disciplines in arts, culture, science and technology. Supports the development and supervision of individual and collective artistic research projects between students, research fellows and faculty from varying fields. Additional work required of students taking the graduate version. Lab fee. Enrollment limited.
R. Green

4.320 Introduction to Sound Creations
(Subject meets with 4.321)
Prereq: 4.301 or permission of instructor
U (Spring)
3-3-6 HASS-A

4.321 Introduction to Sound Creations
(Subject meets with 4.320)
Prereq: Permission of instructor
G (Spring)
3-3-6

Develops appreciation and critical awareness of how sound as an artistic practice is performed, produced, and distributed. Explores contemporary and historical practices that emerge outside a purely musical environment. 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. Additional work required of students taking the graduate version. Lab fee.
Art, Culture and Technology Staff
4.322 Introduction to Three-Dimensional Art Work
Prereq: None
U (Fall)
2-4-6 HASS-A

Presents three-dimensional artwork, such as sculpture and installations, taken from idea to model to 3-D form. Addresses concept, design, material and fabrication, process, context and site, and an object's relation to the body and the environment. Lectures, screenings, and field trips, readings and debates supplement studio practice. Lab fee. Enrollment limited.
A. Aksamija

4.330 Introduction to Networked Cultures and Participatory Media
(Subject meets with 4.331)
Prereq: None
U (Fall)
3-3-6 HASS-A

4.331 Introduction to Networked Cultures and Participatory Media
(Subject meets with 4.330)
Prereq: None
G (Fall)
3-3-6

Overview of participatory art practices, early net-art, net-activism, and current online practices in art and culture. Examines cultural, social and political impacts of mediated communication. Students implement, critique, and discuss design exercises and experiments and develop skills in media literacy and communication. Additional work required of students taking the graduate version. Lab fee.
G. Urbonas

4.332 Advanced Seminar in Networked Cultures and Participatory Media
(Subject meets with 4.333)
Prereq: 4.330 or permission of instructor
U (Spring)
3-3-6 HASS-A

4.333 Advanced Seminar in Networked Cultures and Participatory Media
(Subject meets with 4.332)
Prereq: 4.330, 4.331, or permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit

Teaches skills to create networked platforms and participatory media. Explores the development of new critical platforms and strategies such as independent and alternative media, hybrid TV, blogs, and other social media. Develops advanced skills in media literacy and communication. Additional work required, critique, and discuss design exercises and experiments. Additional work required of students taking the graduate version. Lab fee.
G. Urbonas

4.341 Introduction to Photography and Related Media
(Subject meets with 4.342)
Prereq: None
U (Fall, Spring)
3-3-6 HASS-A

4.342 Introduction to Photography and Related Media
(Subject meets with 4.341)
Prereq: Permission of instructor
G (Fall, Spring)
3-3-6

Introduces history and contemporary practices in artistic photography through projects, lectures, visiting professionals, group discussions, readings, and field trips. Fosters visual literacy and aesthetic appreciation of photography/digital imaging as well as a critical awareness of how images in our culture are produced and constructed. Provides practical instruction in the fundamentals of different camera formats, film exposure and development, lighting, black and white darkroom printing, and digital imaging. Assignments addressing a term-specific topic explore a range of traditional and experimental techniques, develop technical skills, and provide opportunity for personal exploration. Projects continuously presented and discussed in a critical forum. Additional work required of students taking the graduate version. Lab fee. Enrollment limited.
J. Kapadia

4.344 Advanced Photography and Related Media
(Subject meets with 4.345)
Prereq: 4.341
U (Spring)
3-2-4 H-LEVEL Grad 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. Enrollment limited.
J. Kapadia

4.352 Advanced Video and Related Media
(Subject meets with 4.353)
Prereq: 4.354 or permission of instructor
U (Spring)
3-3-6 HASS-A

4.353 Advanced Video and Related Media
(Subject meets with 4.352)
Prereq: Permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit

Introduction to advanced strategies of image/sound manipulation, both technical and conceptual. Covers pre-production planning (storyboards, scripting), refinement of digital editing techniques, visual effects such as chroma-keying, and 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 those taking the graduate version. Lab fee.
J. Kapadia

4.345 Advanced Photography and Related Media
(Subject meets with 4.344)
Prereq: 4.342 or permission of instructor
G (Fall, Spring)
3-2-4 H-LEVEL Grad Credit
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. Enrollment limited.
J. Kapadia
4.354 Introduction to Video and Related Media
(Subject meets with 4.355)
Prereq: None
U (Fall)
3-3-6 HASS-A
4.355 Introduction to Video and Related Media
(Subject meets with 4.354)
Prereq: Permission of instructor
G (Fall)
Units arranged
Covers 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 moving image and video, students consider self-exploration, performance, social critique, and manipulation of raw experience into 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. Students taking graduate version complete additional assignments. Lab fee. Enrollment limited.
A. Nevarez

4.356 Cinematic Migrations
(Subject meets with 4.357)
Prereq: 4.354 or permission of instructor
U (Fall, Spring)
3-3-6 HASS-A
4.357 Cinematic Migrations
(Subject meets with 4.356)
Prereq: 4.355 or permission of instructor
G (Fall, Spring)
3-3-6
Can be repeated for credit
Explores ideas and contexts behind moving images through a multifaceted look at cinemas transmutations, emergence on local and national levels, and global migrations. Looks at the transformation caused by online video, television, spatial installations, performances, dance and many formats and portable devices. Studies the theory and context of films categorization, dissemination and analysis. Presentations, screenings, field trips, readings, guest visitors, and experimental transdisciplinary projects broaden the perception of present cinema. Additional work required of students taking the graduate version. Limited to 12.
R. Green

4.361 Performance Art Workshop
(Subject meets with 4.362)
Prereq: Permission of instructor
U (Fall)
3-3-6 HASS-A
4.362 Performance Art Workshop
(Subject meets with 4.361)
Prereq: Permission of instructor
G (Fall)
3-3-6 H-LEVEL Grad Credit
Surveys performance in relation to media and to spatial structures imagined as settings for narrative movements. Uses video to explore perception of sound and image and how they are altered by various devices. Students design visual forms and performative actions, and make props or objects that embody aspects of their narratives. Includes readings and screenings on the theoretical and historical background of performance art. Assignments lead to a final performance project. Additional work required of students taking the graduate version. Lab fee.
Art, Culture and Technology Staff

4.363 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.369)
Prereq: Permission of instructor
U (Spring)
3-3-6 HASS-A
4.369 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.368)
Prereq: Permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit
Focuses on the production of artistic intervention in public space beyond the gallery/museum context. Addresses and negotiates the complexity of ideas, situations, objects, and materials that are inherent to any public space. Traditional forms of commemoration are examined, in comparison to temporal and critical forms of public art and action. Historical models include the Russian Constructivists, the Situationists International, Conceptual Art, and recent interventionist tactics and artistic strategies. Assigned readings and discussions help students develop an initial concept for a publicly diffused project. Additional work required of students taking the graduate version. Lab fee.
A. Muntadas

4.364 Preparation for SMACT Thesis
Prereq: Permission of instructor
G (Spring, Summer)
3-0-6 H-LEVEL Grad Credit
Can be repeated for credit
Selection of topic, definition of method of approach, preparation of proposal, and development of outline for thesis. Discusses artistic practice as method of critical inquiry. Examines artists’ writing, studies academic requirements and standards. Regular group meetings, including peer reviews, supplemented by independent study and individual conferences with faculty. Restricted to 1st year SMACT students.
A. Aksamija

4.365 Introduction to Video and Related Media
(Subject meets with 4.355)
Prereq: None
U (Fall)
3-3-6 HASS-A
4.355 Introduction to Video and Related Media
(Subject meets with 4.354)
Prereq: Permission of instructor
G (Fall)
Units arranged
Covers 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 moving image and video, students consider self-exploration, performance, social critique, and manipulation of raw experience into 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. Students taking graduate version complete additional assignments. Lab fee. Enrollment limited.
A. Nevarez

4.366 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.369)
Prereq: Permission of instructor
U (Spring)
3-3-6 HASS-A
4.369 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.368)
Prereq: Permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit
Focuses on the production of artistic intervention in public space beyond the gallery/museum context. Addresses and negotiates the complexity of ideas, situations, objects, and materials that are inherent to any public space. Traditional forms of commemoration are examined, in comparison to temporal and critical forms of public art and action. Historical models include the Russian Constructivists, the Situationists International, Conceptual Art, and recent interventionist tactics and artistic strategies. Assigned readings and discussions help students develop an initial concept for a publicly diffused project. Additional work required of students taking the graduate version. Lab fee.
A. Muntadas

4.367 Advanced Projects in Visual Arts
(Subject meets with 4.374)
Prereq: Permission of instructor
U (Spring)
3-3-6 HASS-A
Can be repeated for credit
4.374 Advanced Projects in Visual Arts
(Subject meets with 4.373)
Prereq: Permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit
Investigates conceptual and formal issues in different media or between media such as sculpture, photography and video. Explores issues of representation, interpretation and meaning, and how they relate to historical, social and cultural context. Additional work required of students taking the graduate version.
Art, Culture and Technology Staff

4.368 Preparation for SMACT Thesis
Prereq: Permission of instructor
G (Spring, Summer)
3-0-6 H-LEVEL Grad Credit
Can be repeated for credit
Selection of topic, definition of method of approach, preparation of proposal, and development of outline for thesis. Discusses artistic practice as method of critical inquiry. Examines artists’ writing, studies academic requirements and standards. Regular group meetings, including peer reviews, supplemented by independent study and individual conferences with faculty. Restricted to 1st year SMACT students.
A. Aksamija

4.369 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.369)
Prereq: Permission of instructor
U (Spring)
3-3-6 HASS-A
4.369 Studio Seminar in Public Art/Public Sphere
(Subject meets with 4.368)
Prereq: Permission of instructor
G (Spring)
3-3-6 H-LEVEL Grad Credit
Focuses on the production of artistic intervention in public space beyond the gallery/museum context. Addresses and negotiates the complexity of ideas, situations, objects, and materials that are inherent to any public space. Traditional forms of commemoration are examined, in comparison to temporal and critical forms of public art and action. Historical models include the Russian Constructivists, the Situationists International, Conceptual Art, and recent interventionist tactics and artistic strategies. Assigned readings and discussions help students develop an initial concept for a publicly diffused project. Additional work required of students taking the graduate version. Lab fee.
A. Muntadas

4.370 Tutorial for SMACT Thesis
Prereq: 4.388; Coreq: 4.THG
G (Spring)
3-0-6 H-LEVEL Grad Credit
Can be repeated for credit
Includes regular presentations of students’ writing, group meetings and critiques by thesis class. Supports independent thesis research and thesis project by providing methodology and focus supplemented by regular individual conference with thesis committee members. Restricted to 2nd year SMACT students.
A. Aksamija
4.390 Art, Culture and Technology Studio
Prereq: Permission of instructor
G (Fall, Spring)
3-3-6 H-LEVEL Grad Credit
Can be repeated for credit
Addresses inquiry and debate about art, culture and technology in relation to contemporary artistic practice, critical design, and media. Considers methods of investigation, documentation and display. Discusses the notion of individual and collaborative work and examines modes of communication across disciplines. Students develop projects in which they organize research methods and goals, cultivate a context for their practice, and explore how to successfully explain, display and document their work. Regular presentations and critiques by peers, ACT faculty and fellows, and external guest reviewers. Restricted to SMACT students.
A. Muntadas

4.391 Independent Study in Art, Culture and Technology
Prereq: Permission of instructor
U (Fall, IAP, Spring)
Units arranged
Can be repeated for credit
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
4.393 Independent Study in Art, Culture and Technology
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.394 Independent Study in Art, Culture and Technology
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged [P/D/F] H-LEVEL Grad Credit
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

4.390-4.394 Special Subject: Art, Culture and Technology
Prereq: None
G (Fall, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit
4.531 Special Subject: Art, Culture and Technology
Prereq: None
U (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit
4.532. 4.533 Special Subject: Art, Culture and Technology
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.534 Special Subject: Art, Culture and Technology
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F] H-LEVEL Grad Credit
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.
Art, Culture and Technology Staff

BUILDING TECHNOLOGY

4.401 Environmental Technologies in Buildings
Prereq: None
U (Fall)
3-2-7
Credit cannot also be received for 4.461
Introduction to the thermal behavior of buildings, modern architectural systems, and the materials and construction of their components and assemblies. Examines the basic scientific principles underlying these topics, covering building enclosure, structure, interior space, circulation and conveyance systems, as well as power and water distribution systems. Introduces a range of technologies and analysis techniques for designing comfortable and resource-efficient indoor environments. Students apply these techniques to explore the role that energy and materials have in shaping architecture.
C. Reinhart

4.411J D-Lab Schools: Building Technology Laboratory
(Same subject as EC.713J)
Prereq: Physics I (GIR), Calculus I (GIR)
U (Fall)
2-3-7 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.
L. K. Norford

4.42J Fundamentals of Energy in Buildings
(Same subject as 1.044J, 2.66J)
Prereq: Physics I (GIR), Calculus II (GIR)
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: U (Fall)
3-2-7 REST
Design-based introduction to energy and thermo-sciences, with applications to sustainable, energy-efficient architecture and building technology. Covers introductory thermodynamics, air/water/vapor mixtures, and heat transfer. Studies leading order factors in building energy use. Includes several building design projects in which students creatively employ energy fundamentals and building energy use.
L. R. Glicksman

4.424J Modeling and Approximation of Thermal Processes
(Same subject as 2.52J)
Prereq: 2.51
Acad Year 2014–2015: G (Fall)
Acad Year 2015–2016: Not offered
3-0-9 H-LEVEL Grad Credit
See description under subject 2.52).
L. R. Glicksman

4.430 Daylighting and Solar Gain Control
Prereq: 4.401 or permission of instructor
G (Spring)
Units arranged H-LEVEL Grad Credit
Studies natural and electric lighting in an architectural context. Promotes the integration of occupant comfort, energy efficiency and daylight availability throughout the design process, with an emphasis on the role light can play in shap-
COURSES

4.431 Architectural Acoustics
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
Units arranged H-LEVEL Grad Credit

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 2014–2015: Not offered
Acad Year 2015–2016: U (Spring)
3-2-7

4.433 Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods
(Subject meets with 4.432)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
3-2-4 H-LEVEL Grad Credit

Studies energy flows in and around groups of buildings from individual structures to complete, large-scale neighborhoods. Students use digital techniques to analyze and influence building energy use, neighborhood walkability, and outdoor comfort. Group work focuses on the design of a sustainable, mixed-use urban neighborhood that successfully engages microclimatic effects, such as shading of neighboring buildings, urban heat island effects, and localized wind patterns. Additional work is required of students taking the graduate version.

C. Reinhart

4.440 Building Structural Systems I
(Subject meets with 4.462)
Prereq: Calculus II (GIR)
U (Spring)
3-3-6 REST

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.

J. Ochsendorf

4.441 Analysis of Historic Structures
(Subject meets with 4.445)
Prereq: None
Acad Year 2014–2015: U (Spring)
Acad Year 2015–2016: Not offered
3-0-0

4.442 Analysis of Historic Structures
(Subject meets with 4.444)
Prereq: None
Acad Year 2014–2015: G (Spring)
Acad Year 2015–2016: Not offered
3-0-6

Technological and historical study of structures in architecture and engineering. Focuses on the design and assessment of historic structures in masonry, timber, concrete, and metal. Course is driven by student research proposals. Previous student projects have researched Gothic flying buttresses, wooden covered bridges, Roman aqueducts, and iron train stations.

J. Ochsendorf

4.447 Design for Sustainability
(Subject meets with 1.819)
Prereq: Permission of instructor
G (Fall)
2-0-4 H-LEVEL Grad Credit

See description under subject 1.819.

J. Connor, J. Ochsendorf

4.461 Architectural Building Systems
Prereq: None
G (Fall)
3-1-5

Credit cannot also be received for 4.401

Introduction to modern architectural systems and the materials and construction of their components and assemblies. Covers in detail building enclosure, structure, interior space, circulation and conveyance systems, and power and water distribution systems. Reviews technologies for response to climate, intelligent systems integration, passive and active heating and cooling, lighting and acoustics.

Building Technology Staff

4.462 Building Structural Systems II
(Subject meets with 1.056, 4.440)
Prereq: 4.461 or permission of instructor
G (Spring)
3-2-4

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.

J. Ochsendorf

4.463 Building Structural Systems II
Prereq: 4.440, 4.462, or permission of instructor
G (Fall)
3-2-4

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.

J. Ochsendorf

4.464 Energy in Building Design
Prereq: 4.463 or permission of instructor
G (Spring)
3-2-4

Presents concepts and methods for energy-efficient and environmentally responsible building design. Topics include climate, thermal comfort, heat flows through building materials, natural ventilation, passive, active and renewable energy systems, and environmental implications of building. Emphasizes practical applications for environmental design through analysis of precedent buildings and design projects.

L. Norford
4.473 Design Workshop for a Sustainable Future
Prereq: 4.151; 4.461 or permission of instructor
G (Fall)
3-0-6 H-LEVEL Grad Credit
Can be repeated for credit
Focuses on strengthening the link between design and technology with an emphasis on sustainability concepts. Introduces theories behind resource-efficient built environments and how they can enhance the design process. Students explore ways to effectively integrate building performance goals, such as energy-efficiency, efficient material use, structural stability and occupant comfort into the design process. Limited to 16.
J. Ochsendorf

4.475 Design for Sustainable Urban Futures
Prereq: 4.151; 4.461 or permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
3-0-6 H-LEVEL Grad Credit
Focuses on understanding and assessing the resource intensity of urban centers. Introduces key concepts from ecological economics, and urban economics and ecology, while surveying the state of global resource extraction and consumption. Students develop focused, alternative urban scenarios that offer practical and effective potential for greater resource efficiencies. Explores the urban built environment, urban mobility, decentralized infrastructure, and other important alternative modes for production and consumption.
Building Technology and Architecture Design Staff

4.477 Emergent Materials
Prereq: None
G (Spring)
Units arranged
Workshop reinterprets the function and application of various emerging building materials used in contemporary architectural constructs. Lectures address themes of resource efficiency and material selection within the context of emerging areas of research. Readings establish what is considered state-of-the-art and support the making of material prototypes. Offered for 9 or 12 units.
J. Fernandez

4.481 Building Technology Seminar
Prereq: Permission of instructor
G (Fall)
2-0-1 H-LEVEL Grad Credit
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.
J. Fernandez, L. R. Glicksman, L. Norford, J. Ochsendorf, C. Reinhart

4.488 Preparation for S.M.B.T. Thesis
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged [P/D/F] H-LEVEL Grad Credit
Can be repeated for credit
Building Technology Staff

4.489 Preparation for Building Technology PhD Thesis
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged [P/D/F] H-LEVEL Grad Credit
Can be repeated for credit
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

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

4.493 Independent Study in Building Technology
Prereq: Permission of instructor
U (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.494 Independent Study in Building Technology
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged [P/D/F] H-LEVEL Grad Credit
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 (IAP, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit
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
4.S42 Special Subject: Building Technology
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.S43 Special Subject: Building Technology
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.S44 Special Subject: Building Technology
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F] H-LEVEL Grad Credit
Can be repeated for credit
4.S45 Special Subject: Building Construction
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
4.S46 Special Subject: Energy in Buildings
Prereq: Permission of instructor
G (IAP, Spring)
Units arranged H-LEVEL Grad Credit
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

COMPUTATION

4.500 Introduction to Geometric Modeling
Prereq: None
U (Fall)
2-2-8
Introduces 3-D CAD modeling to students with little or no experience. Uses basic theories in generative modeling combined with a variety of modeling applications to explore surface, solid, and mesh modeling techniques. Presents a variety of input tools, from entry-level keyboard commands to 3-D scanning and CAD scripting. Design models created throughout the term aid in exploration of a variety of output devices, such as paper-printed media, 3-D rendering, 3-D printing, and some CNC manufacturing. Includes weekly modeling assignments and a final project. Preference to Course 4 majors and minors.
L. Sass

4.501 Creative Design Prototyping
Prereq: 4.500
U (Spring)
3-3-6
Introduction to digital fabrication and online presentation as a single design process. Project-based class that integrates iterative design on paper with physical prototyping across many scales. Hands on learning of fabrication lab equipment integrated with design studio. It starts with machine learning through exercises quickly moving to a stepped design to production process: 3-D printings, CNC machining and robotic finishing. The final product is an individually designed and fabricated functional piece of furniture. Preference to Course 4 majors and minors.
L. Sass

4.503 Advanced Visualization: Architecture in Motion Graphics
(Subject meets with 4.562)
Prereq: 4.500 or permission of instructor
U (Fall)
3-2-7
Advanced projects in architectural visualization with an emphasis on the use of computer graphics animation and video production media. Workshop introduces advanced visualization software and teaches exploration of spatial expressions in motion graphics format. Students review and discuss selected literature and video materials on architecture and film. Additional work required of students taking the graduate version. Preference to Course 4 majors and minors.
T. Nagakura

4.504 Design Scripting
(Subject meets with 4.564)
Prereq: 4.500
U (Spring)
2-2-8
Introduces fundamental ideas of computer programming and demonstrates their application to the process of visual and spatial design. Teaches methods for algorithmically modeling visual and spatial forms, evaluating their conditions, building interface, and processing formal data for prototyping, manufacturing, rendering, and other design tools. Proceeds through a sequence of scripting exercises in application programming environments. Each exercise requires a student to articulate computational tasks in the context of a design, and to write codes that produce graphic solutions. Additional work required of students taking the graduate version.
T. Nagakura

4.510 Design in the Making
Prereq: Permission of instructor
G (Fall)
3-3-6 H-LEVEL Grad Credit
Research-based class that explores novel architectural systems. Students develop propos-
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Prerequisites</th>
<th>Credits</th>
<th>Level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.517</td>
<td>Parametric and Building Information Modeling</td>
<td>Prereq: 4.500 or permission</td>
<td>3-2-7</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<td>of instructor G (Fall)</td>
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<tr>
<td>4.520</td>
<td>Visual Computing I (Subject meets with 4.521)</td>
<td>Prereq: None</td>
<td>3-0-6</td>
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<tr>
<td>4.521</td>
<td>Visual Computing I (Subject meets with 4.520)</td>
<td>Prereq: None</td>
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<tr>
<td>4.522</td>
<td>Visual Computing II (Subject meets with 4.523)</td>
<td>Prereq: 4.520 or permission</td>
<td>3-0-9</td>
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<td>of instructor U (Spring)</td>
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<tr>
<td>4.523</td>
<td>Visual Computing II (Subject meets with 4.522)</td>
<td>Prereq: 4.520, 4.521 or permission of instructor G (Spring)</td>
<td>3-0-6</td>
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<tr>
<td>4.540</td>
<td>Introduction to Shape Grammars I</td>
<td>Prereq: None</td>
<td>3-0-6</td>
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<tr>
<td>4.541</td>
<td>Introduction to Shape Grammars II</td>
<td>Prereq: 4.540</td>
<td>3-0-6</td>
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<tr>
<td>4.542</td>
<td>Background to Shape Grammars</td>
<td>Prereq: 4.541 or permission</td>
<td>3-0-6</td>
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<td>of instructor G (Spring)</td>
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<tr>
<td>4.550</td>
<td>Computational Design Lab</td>
<td>(Subject meets with 4.570)</td>
<td>3-0-9</td>
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<td>Prereq: Permission of instructor U (Spring)</td>
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<td>4.552</td>
<td>Workshop in Architectural Computation</td>
<td>Prereq: Permission of instructor G (IAP, Spring)</td>
<td>3-0-6</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<tr>
<td>4.553</td>
<td>Workshop in Architectural Computation</td>
<td>Prereq: Permission of instructor G (Fall, IAP, Spring)</td>
<td>3-0-6</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<tr>
<td>4.557j</td>
<td>City Science</td>
<td>(Same subject as MAS.552j)</td>
<td>3-0-9</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<td>Prereq: Permission of instructor G (Fall, Spring)</td>
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<tr>
<td>4.561</td>
<td>Introduction to Building Information Modeling in Architecture</td>
<td>Prereq: Permission of instructor Acad Year 2014–2015: Not offered Acad Year 2015–2016: G (Spring)</td>
<td>3-2-7</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<tr>
<td>4.562</td>
<td>Advanced Visualization: Architecture in Motion Graphics</td>
<td>(Subject meets with 4.503)</td>
<td>3-0-9</td>
<td>H-LEVEL</td>
<td>Grad Credit</td>
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<td>Prereq: Permission of instructor G (Fall)</td>
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</table>

Additional work required of students taking graduate version.**

*Note: *The course descriptions and notes provided are based on the information available in the given text. Additional details or changes may be available in the course catalog or syllabus. The credits and levels are determined by the institution and may vary.**
4.564 Design Scripting  
Subject meets with 4.504  
Prereq: Permission of instructor  
G (Spring)  
2-2-8 H-LEVEL Grad Credit  
Introduces fundamental ideas of computer programming and demonstrates their application to the process of visual and spatial design. Teaches methods for algorithmically modeling visual and spatial forms, evaluating their conditions, building interface, and processing formal data for prototyping, manufacturing, rendering, and other design tools. Proceeds through a sequence of scripting exercises in application programming environments. Each exercise requires a student to articulate computational tasks in the context of a design, and to write codes that produce graphic solutions. Additional work required of students taking the graduate version.  
T. Nagakura

4.566 Advanced Projects in Digital Media  
Prereq: 4.562, 4.564, or permission of instructor  
G (Spring)  
Units arranged H-LEVEL Grad Credit  
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, design knowledge representation and media interface.  
T. Nagakura

4.569 Designing Interactions: Media and Mobile Technologies (New)  
(Same subject as CMS.834J)  
Subject meets with CMS.634  
Prereq: None  
G (Fall)  
3-3-6  
Can be repeated for credit  
See description under subject CMS.834J.  
F. Casalegno, T. Nagakura

4.570 Computational Design Lab  
Subject meets with 4.550  
Prereq: Permission of instructor  
G (Spring)  
Units arranged H-LEVEL Grad Credit  
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 term or year. Open to students from diverse backgrounds in architecture and other design-related areas. Additional work required of students taking graduate version.  
Computation Staff

4.580 Inquiry into Computation and Design  
Prereq: None  
G (Fall)  
3-0-9  
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.  
T. Nagakura

4.581 Proseminar in Computation  
Prereq: Permission of instructor  
G (Fall, Spring)  
3-0-9 [P/D/F] H-LEVEL Grad Credit  
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] H-LEVEL Grad Credit  
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, Spring)  
3-0-0 [P/D/F] H-LEVEL Grad Credit  
Can be repeated for credit  
Group discussions and presentation of ongoing graduate student research in the Computation program.  
T. Knight

4.584 Reading Seminar in Design and Computation  
Prereq: Permission of instructor  
G (Fall, Spring)  
Units arranged [P/D/F] H-LEVEL Grad Credit  
Can be repeated for credit  
Reading and discussion of particular topics in design and computation. Students lead discussions, make oral presentations, and prepare reviews of weekly readings.  
T. Knight

4.587 SMArchS Computation Pre-Thesis Preparation  
Prereq: 4.221 or permission of instructor  
G (Fall, Spring)  
3-0-3 [P/D/F] H-LEVEL Grad Credit  
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

4.589 Preparation for Design and Computation PhD Thesis  
Prereq: Permission of instructor  
G (Fall, Spring, Summer)  
Units arranged [P/D/F] H-LEVEL Grad Credit  
Can be repeated for credit  
Computation Staff
4.591 Independent Study in Architectural Computation
Prereq: Permission of instructor
U (Fall, IAP, Spring)
Units arranged
Can be repeated for credit

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

4.593 Independent Study in Architectural Computation
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.594 Independent Study in Architectural Computation
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged [P/D/F] H-LEVEL Grad Credit
Can be repeated for credit

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

Computation Staff

4.550 Special Subject: Architectural Computation
Prereq: None
U (IAP, Spring)
Units arranged
Can be repeated for credit

4.551 Special Subject: Architectural Computation
Prereq: None
U (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit

4.552 Special Subject: Architectural Computation
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.553 Special Subject: Architectural Computation
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.554 Special Subject: Architectural Computation
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged [P/D/F] H-LEVEL Grad Credit
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 H-LEVEL Grad Credit
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

4.556 Special Subject: Shape Grammars
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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
U (Fall)
3-2-7 HASS-A

Introduction to the history and interpretation of western art that explores painting, graphic arts and sculpture from the Renaissance 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. Subject includes trips to local museums.

K. Smentek

4.602 Modern Art and Mass Culture
Prereq: None
U (Spring)
4-0-8 HASS-A; CI-H

Introduction to theories of modernism and postmodernism and their related art forms (roughly 18th century to present). 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 video and “relational aesthetics.” These art works are viewed in their interaction with advertising, caricature, comics, graffiti, television, fashion, “primitive” art, propaganda, and networks on the internet.

C. Jones
4.603 Formal Analysis in Architecture, Art, and Design  
(Subject meets with 4.604)  
Prereq: None  
U (Fall)  
3-0-9 HASS-A  
4.604 Formal Analysis in Architecture, Art, and Design  
(Subject meets with 4.603)  
Prereq: Permission of instructor  
G (Fall)  
Units arranged

Explores buildings, works of art, and artifacts of the twentieth century that have shaped today's understanding and approach to architecture. Emphasizes exemplary works, as understood from the practitioner's perspective. Students analyze buildings through drawing, modeling, reading, and writing. Provides a framework for understanding contemporary architectural design and to building a visual vocabulary to communicate effectively about design. Additional work required of students taking the graduate version. Preference to Course 4 majors.

HTC Staff

4.605 A Global History of Architecture  
Prereq: None  
U (Spring)  
4-0-8 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.

M. Jarzombek

4.606 Visual Perception and Art  
Prereq: None  
Acad Year 2014–2015: Not offered  
Acad Year 2015–2016: U (Fall)  
3-2-7 HASS-A; CI-H

Introduces visual perception from neurological, cultural, and artistic vantage points. Examines aspects of visual culture ranging from body adornment to public spaces, and from logotypes to moving images. Topics range from ritual space to forensics to machine-aided vision (cameras, radar devices, robotic scanners). Designed to develop skills in visual analysis and interpretation through lectures, oral presentations, field trips, and written essays. Enrollment limited.

C. Jones

4.607 Thinking About Architecture: In History and At Present  
Prereq: 4.645 or permission of instructor  
G (Fall)  
Units arranged H-LEVEL Grad Credit

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 and Architecture (New)  
(Subject meets with 4.609)  
Prereq: Permission of instructor  
G (Spring)  
Units arranged H-LEVEL Grad Credit

Examination of historical method in art 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.

HTC Staff

4.609 Seminar in the History of Art and Architecture  
(Subject meets with 4.608)  
Prereq: Permission of instructor  
U (Spring)  
3-0-9 HASS-A

Examination of historical method in art 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.

HTC Staff

4.610 Civic Architecture in Islamic History  
(Subject meets with 4.611)  
Prereq: None  
Acad Year 2014–2015: U (Spring)  
Acad Year 2015–2016: Not offered  
3-0-9 HASS-A  
4.611 Civic Architecture in Islamic History  
(Subject meets with 4.610)  
Prereq: None  
Acad Year 2014–2015: G (Spring)  
Acad Year 2015–2016: Not offered

Units arranged

In-depth review of palatial, residential, governmental, military, commercial, and landscape architecture in the Islamic world from the 7th to the 21st century. Analysis the effects of politics, culture, religion and technology on the formation and development of Islamic architectural traditions, and their possible models and regional transformations. Additional work required of students taking the graduate version.

N. Rabbat

4.614 Architecture in the Islamic World  
Prereq: None  
U (Fall)  
3-0-9 HASS-A

Introduces the history of Islamic cultures that spans fourteen centuries and three continents—Asia, Africa, Europe—and recent developments in the United States. Studies a number of representative examples, from the House of the Prophet to the present, in conjunction with their urban, social, political, and intellectual environments. Presents Islamic architecture both as a full-fledged historical tradition and as a dynamic and interactive cultural catalyst that influenced and was influenced by the civilizations with which it came in contact.

N. Rabbat

4.615 The Architecture of Cairo  
(Subject meets with 4.618)  
Prereq: None  
Acad Year 2014–2015: U (Spring)  
Acad Year 2015–2016: Not offered  
3-0-9 HASS-A

Explores the history of Cairo from initial settlement (640s) to the present. Reviews its urban and architectural developments, and connects them to their Islamic and Mediterranean architectural and cultural contexts. Presents the city as a major cultural, political, and economic center that has for over a millennium influenced its Arab, Islamic, African, and Mediterranean milieus. Additional work required of students taking the graduate version.

N. Rabbat
4.616 Selected Topics on Culture and Architecture
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
Units arranged H-LEVEL Grad Credit
Seminar on how culture interacts with architecture. Analyzes architecture as a conveyor of messages that transcend stylistic, formal, and iconographic concerns to include an assessment of disciplinary, 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.
N. Rabbat

4.617 Issues in Islamic Urbanism
Prereq: Permission of instructor
Acad Year 2014–2015: G (Spring)
Acad Year 2015–2016: Not offered
Units arranged H-LEVEL Grad Credit
Seminar on selected topics from the history of Islamic urbanism. Examines patterns of settlement, urbanization, development, and architectural production in various places and periods, ranging from the formative period in the 7th century to the new cities emerging today. 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.
N. Rabbat

4.618 The Architecture of Cairo
(Subject meets with 4.615)
Prereq: Permission of instructor
Acad Year 2014–2015: G (Spring)
Acad Year 2015–2016: Not offered
Units arranged H-LEVEL Grad Credit
Explores the history of Cairo from initial settlement (640s) to the present. Reviews its urban and architectural developments, and connects them to their Islamic and Mediterranean architectural and cultural contexts. Presents the city as a major cultural, political, and economic center that has for over a millennium influenced its Arab, Islamic, African, and Mediterranean milieu. Additional work required of students taking the graduate version.
N. Rabbat

4.619 Historiography of Islamic Architecture
Prereq: Permission of instructor
Acad Year 2014–2015: G (Fall)
Acad Year 2015–2016: Not offered
3-0-9 H-LEVEL Grad Credit
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.
N. Rabbat

4.620 The Mughal Knot
Prereq: Permission of instructor
Acad Year 2014–2015: G (Spring)
Acad Year 2015–2016: Not offered
Units arranged H-LEVEL Grad Credit
Seminar on the history and development of Islamic urbanism through the Mughal period. Examines patterns of settlement, urbanization, development, and architectural production in various places and periods, ranging from the formative period in the 7th century to the new cities emerging today. 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.
N. Rabbat

4.621 Orientalism and Representation
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
Units arranged H-LEVEL Grad Credit
Seminar on the historiography and politics of representation with special focus on Orientalist traditions in architecture, art, literature, and scholarship. Critically analyzes pivotal texts, projects, and images that informed the cross-cultural encounters between the West and the Orient from Antiquity to the present. Discusses how political and ideological attitudes and religious beliefs informed both the construction and reproduction of Western knowledge about the Islamic world as well as the revisionist Oriental self-representations. Research paper required.
N. Rabbat

4.622 The Mughal Empire: History, Heritage, and Design
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Fall)
3-0-9 H-LEVEL Grad Credit
Seminar focuses on environmental design in the Mughal empire of South Asia, a dynasty of Central Asian origins that extended over the current territories of India, Pakistan, Bangladesh, and Afghanistan. Topics include gardens, cities, cultural landscapes, and political territories, along with their contemporary significance for cultural heritage conservation and design. Limited to 15.
J. Wescoat

4.623 Mughal Landscapes: History, Heritage, and Design
(Subject meets with 4.635)
Prereq: None
G (Fall)
Units arranged
4.635 Early Modern Architecture and Art
(Subject meets with 4.634)
Prereq: None
U (Fall)
3-0-9 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.
L. Jacobi

4.625 Water Planning, Policy, and Design
(Same subject as 11.378J)
Prereq: Permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: G (Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
Focuses on water in environmental planning, policy, and design. Draws together faculty and students who are working on water-related research projects to develop and maintain a current perspective on the field from the site to metropolitan and international scales. Limited to 15.
J. Wescoat

4.633 Locating Capitalism: Producing Early Modern Cities and Objects (New)
Prereq: Permission of instructor
G (Spring)
Units arranged H-LEVEL Grad Credit
Explores what defines the parameters of an early modern profit economy in Europe. Discusses major interpretive frameworks that historically have guided scholarship on the period in architectural, art, and economic history. Traces the core themes of commodification, production, and consumption—analyzing the relevance of studies on pre- and early modern globalization—to the culture and time under consideration. Can be taken for 9 or 12 units.
L. Jacobi

4.634 Early Modern Architecture and Art
(Subject meets with 4.635)
Prereq: None
G (Fall)
Units arranged
4.640 Advanced Study in Critical Theory of Architecture
Prereq: Permission of instructor
G (Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit
Seminar on a selected topic in critical theory. Requires original research and presentation of oral and written report.
A. Dutta

4.641 19th-Century Art
(Subject meets with 4.644)
Prereq: None
U (Spring)
4-0-8 HASS-A
4.644 19th-Century Art
(Subject meets with 4.641)
Prereq: None
G (Spring)
Units arranged Survey of visual culture from the late 18th century to 1900 with an emphasis on Western Europe and its global points of contact. Topics include art and revolution, empire and its image, mythologies of the artist, gender and representation, public exhibitions, the dealer/critic system, and the emergence of the avant-garde. Strikes a balance between historical and contemporary critical perspectives to assess art’s engagement with social and political experience. Additional work required of students taking the graduate version. Additional work required of students taking the graduate version.
K. Smentek

4.645 Selected Topics in Architecture: 1750 to the Present
Prereq: 4.210 or permission of instructor
G (Spring)
3-0-6
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 Research Programs in Modern Architecture
Prereq: 4.645 or permission of instructor
g (Spring)
Units arranged H-LEVEL Grad Credit
Explores architectural positions developed in modern times, whether by individual architects or by groups of architects/researchers. Seminar offers a construction in the discipline of architecture parallel to the epistemology cast by Imre Lakatos, which sees science as a system of competing research programs. Participants explore and present notable positions within the discipline in modern times, mainly the 20th century. Limited to 15; preference to MArch students.
S. Anderson

4.647 Technopolitics, Culture, Intervention
Prereq: 4.645 or permission of instructor
G (Fall)
Units arranged H-LEVEL Grad Credit
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

4.648J Resonance: Sonic Experience, Science, and Art (New)
(Same subject as 21A.507J)
(Subject meets with 4.649J, 21A.519J)
(Subject meets with 4.648J, 21A.507J)
Prereq: None
U (Fall)
3-0-9 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 or research project as a final requirement. Students taking graduate version complete additional assignments.
S. Helmreich, C. Jones

4.651 Art Since 1940
Prereq: None
Acad Year 2014–2015: U (Spring)
Acad Year 2015–2016: Not offered
3-0-9 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 art movements (feminism, identity politics, AIDS activism) that come to change the terms of arts engagements with civic culture. Visits to area art museums and writing assignments develop skills for visual analysis and critical writing.
C. Jones

4.661 Theory and Method in the Study of Architecture and Art
Prereq: Permission of instructor
G (Fall)
3-0-9 H-LEVEL Grad Credit
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. Open only to PhD candidates and other advanced students.
M. Jarzombek
4.670 Nationalism, Internationalism, and Globalism in Modern Art
(Subject meets with 4.671)
Prereq: None
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: Not offered
Units arranged

4.671 Nationalism, Internationalism, and Globalism in Modern Art
(Subject meets with 4.670)
Prereq: 4.601 or permission of instructor
Acad Year 2014–2015: Not offered
Acad Year 2015–2016: U (Spring)
3-1-8

Students study how international modernism interacted with the concept of “nation” and how contemporary discourses concerning globalism changes that dynamic in relation to modern art. Seminar attendance, visits to art museums, and a research paper required. Additional work required of students taking the graduate version.

C. Jones

4.672 Installation Art
(Subject meets with 4.673)
Prereq: None
Acad Year 2014–2015: G (Spring)
Acad Year 2015–2016: Not offered
Units arranged

4.673 Installation Art
(Subject meets with 4.672)
Prereq: 4.601 or permission of instructor
Acad Year 2014–2015: U (Spring)
Acad Year 2015–2016: Not offered
3-0-9

Focuses on a specific genre of contemporary art that produces environments rather than portable “art objects.” Installation art is viewed from a historical perspective, as a rejection of the modernist aesthetic of purity and the neutral white gallery space. Its corollary in site-specific art is explored in relation to previous exhibition models such as natural history displays or merchandising conventions. Students taking the graduate version must produce a final research paper.

C. Jones

4.674 Collect, Classify, Consume
Prereq: Permission of instructor
G (Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit with permission of instructor

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.

K. Smentek

4.677 Advanced Study in the History of Art
Prereq: Permission of instructor
G (Fall, Spring)
Units arranged H-LEVEL Grad Credit
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. Oral presentations and research paper required. Offered for 9 or 12 units.

K. Smentek

4.686 SMArchS AKPIA Pre-Thesis Preparation (New)
Prereq: 4.221; 4.619 or 4.621
G (Fall, Spring)
0-1-2 [P/D/F] H-LEVEL Grad Credit

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.

N. Rabbat, J. Wescoat

4.687 SMArchS HTC Pre-Thesis Preparation
Prereq: 4.221, 4.661
G (Fall, Spring)
0-1-2 [P/D/F] H-LEVEL Grad Credit

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.

HTC Staff

4.689 Preparation for History, Theory, and Criticism—PhD Thesis
Prereq: Permission of instructor
G (Fall, Spring, Summer)
Units arranged [P/D/F] H-LEVEL Grad Credit
Can be repeated for credit


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

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

4.693 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

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] H-LEVEL Grad Credit
Can be repeated for credit

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

HTC Staff
4.560 Special Subject: History, Theory and Criticism of Architecture and Art
Prereq: None
U (IAP, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit

4.561 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

4.562 Special Subject: History, Theory and Criticism of Architecture and Art
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.563 Special Subject: History, Theory and Criticism of Architecture and Art
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged H-LEVEL Grad Credit
Can be repeated for credit

4.564 Special Subject: History, Theory and Criticism of Architecture and Art
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged [P/D/F] H-LEVEL Grad Credit
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.

HTC Staff

4.565 Special Subject: Islamic and Non-Western Architecture
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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 and/or design projects, varying at the discretion of the instructor.

HTC Staff

4.566 Special Subject: History, Theory and Criticism of Art
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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.

K. Smentek

4.567 Special Subject: Study in Modern Art
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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.

HTC Staff

4.568 Special Subject: Study in Modern Architecture
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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.

M. Jarzombek

4.569 Special Subject: Advanced Study in the History of Urban Form
Prereq: Permission of instructor
G (IAP, Spring)
Not offered regularly; consult department
Units arranged H-LEVEL Grad Credit
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, Spring, Summer)
Units arranged H-LEVEL Grad Credit
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.THTJ Thesis Research Design Seminar
(Same subject as 11.THTJ)
Prereq: None
U (Fall)
3-0-9
Can be repeated for credit

See description under subject 11.THTJ.

C. Abbanat

4.THU Undergraduate Thesis
Prereq: 4.ThT or 4.119
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.

Architecture Staff

4.UR Undergraduate Research in Architecture
Prereq: Permission of instructor
U (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]
Can be repeated for credit

4.URG Undergraduate Research in Architecture
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.

L. Sass
## Bachelor of Science in Architecture/Course 4

<table>
<thead>
<tr>
<th>General Institute Requirements (GIRs)</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Requirement</td>
<td>6</td>
</tr>
<tr>
<td>Humanities, Arts, and Social Sciences Requirement (one subject can be satisfied by a subject in the Departmental Program)‡</td>
<td>8</td>
</tr>
<tr>
<td>Restricted Electives in Science and Technology (REST) Requirement</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory Requirement</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total GIR Subjects Required for SB Degree</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

### Communication Requirement
The program includes a Communication Requirement of 4 subjects:
- 2 subjects designated as Communication Intensive in Humanities, Arts, and Social Sciences (CI-H); and
- 2 subjects designated as Communication Intensive in the Major (CI-M).

### PLUS Departmental Program
Subject names below are followed by credit units, and by prerequisites, if any (corequisites in italics)

#### Required Subjects

- 4.021 Introduction to Architecture Design, 12, HASS-A
- 4.022 Architecture Design Foundations, 12
- 4.023 Architecture Design Studio 1, 24, CI-M; 4.021*, 4.022
- 4.024 Architecture Design Studio 2, 24; 4.023, 4.401, 4.500, 4.603
- 4.302 Foundations in Art, Design, and Spatial Practices, 12, 4.021*; CI-M
- 4.401 Environmental Technologies in Buildings, 12
- 4.440J Building Structural Systems I, 12, REST; Calculus II (GIR)
- 4.500 Introduction to Geometric Modeling, 12
- 4.501 Creative Design Prototyping, 12; 4.500†
- 4.503 Advanced Visualization: Architecture in Motion Graphics, 12; 4.500†
- 4.505 A Global History of Architecture, 12, HASS-A†
- 4.514 Architecture in the Islamic World, 12, HASS-A†
- 4.535 Early Modern Architecture and Art, 12, HASS-A†

#### Restricted Electives

- 4.025 Architecture Design Studio 3, 24; 4.024, 4.440|24
- Two subjects from the following list of subjects

#### Art, Culture and Technology

- 4.307 Art, Architecture, and Urbanism in Dialogue, 12; 4.301 or 4.302
- 4.312 Introduction to Three-Dimensional Art Work, 12, HASS-A
- 4.341 Introduction to Photography and Related Media, 12, HASS-A
- 4.354 Introduction to Video and Related Media, 12, HASS-A
- 4.368 Studio Seminar in Public Art/Public Sphere, 12, HASS-A; permission of instructor

#### Building Technology

- 4.411J D-Lab Schools: Building Technology Laboratory, 12; LAB; Physics I (GIR), Calculus I (GIR)
- 4.421 Fundamentals of Energy in Buildings, 12, REST; Physics I (GIR), Calculus II (GIR)
- 4.422 Modeling Urban Energy Flows for Sustainable Cities and Neighborhoods, 12; permission of instructor
- 4.444 Analysis of Historic Structures, 12

#### Computation

- 4.501 Digital Design and Fabrication, 12; 4.500†
- 4.503 Advanced Visualization: Architecture in Motion Graphics, 12; 4.500†
- 4.504 Design Scripting, 12; 4.500
- 4.520 Visual Computing 1, 12
- 4.522 Visual Computing 2, 12; 4.520*
### Departmental Program Units That Also Satisfy the GIRs

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.601</td>
<td>Introduction to Art History, 12, HASS-A</td>
<td>12</td>
</tr>
<tr>
<td>4.602</td>
<td>Modern Art and Mass Culture, 12, HASS-A, CI-H</td>
<td>12</td>
</tr>
<tr>
<td>4.605</td>
<td>A Global History of Architecture, 12, HASS-AT</td>
<td>12</td>
</tr>
<tr>
<td>4.614</td>
<td>Architecture in the Islamic World, 12, HASS-AT†</td>
<td>12</td>
</tr>
<tr>
<td>4.635</td>
<td>Early Modern Architecture and Art, 12, HASS-AT†</td>
<td>12</td>
</tr>
<tr>
<td>4.651</td>
<td>Art Since 1940, 12, HASS-A</td>
<td>12</td>
</tr>
</tbody>
</table>

#### Total Units Beyond the GIRs Required for SB Degree

<table>
<thead>
<tr>
<th>Units Required</th>
<th>Total Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>192</td>
<td>192</td>
</tr>
</tbody>
</table>

**Notes**

* Alternate prerequisites are listed in the subject description.

† Restricted electives are subjects that are also listed under required subjects. However students only choose one from the designated groups to satisfy the required subjects. It is acceptable for them to use the subjects not chosen toward the restricted elective options.

‡ Only three subjects required by the department may also satisfy the General Institute Requirements.

For an explanation of credit units, or hours, please refer to the online help of the MIT Subject Listing & Schedule, [http://student.mit.edu/catalog/index.cgi](http://student.mit.edu/catalog/index.cgi).