DEPARTMENT OF ARCHITECTURE

Graduate Study

The Department of Architecture offers five graduate degree programs—the Master of Architecture (MArch), Master of Science in Architecture Studies (SMArchS), Master of Science in Building Technology (SMBT), Master of Science in Art, Culture, and Technology (SMACT), and the Doctor of Philosophy (PhD).

Master of Architecture

The professional Master of Architecture (MArch) degree program—structured to educate those who aspire to registration and licensure as architects—is diverse and open-ended, with many avenues of appropriate research and practice of architecture available. Areas of faculty inquiry include materials, fabrication, and technology; drawing and geometry; theory and criticism; sustainability and climate change; and culture in an age of rapid change and globalization. Additional areas of concern include design as it engages related disciplines aligned with architectural production; the environment as an ecologically structured phenomenon; the fabrication processes of building; new technologies and their impact on practice; and the spatial, temporal, social, and urban contexts of buildings. Given the varied perspectives from which the curriculum is conceived, an important aspect of the student's development is the ability to establish links between different areas of focus and architecture's many disciplines.

The general requirements for the MArch degree (*https://catalog.mit.edu/mit/graduate-education/general-degree-requirements/#mastersdegreetext*) are cited in the section on General Degree Requirements for graduate students. The MArch degree program (*https://catalog.mit.edu/degree-charts/master-architecture*) comprises graduate-level architecture design studios and supporting subjects central to the curriculum. The professional curriculum specifies that students study a range of subjects in several interrelated fields, and required and elective subjects in the department's various discipline groups and in related departments offer multiple paths for future professional possibilities.

The three-term core program is tightly integrated with complementary subjects in design skills, cultures of form, cultural and theoretical precedents, and materials and construction. Advanced "option" studios give students the opportunity to broaden their experience of culture, contexts, and varying scales for design, and to develop their own attitudes and positions toward architectural production. Students are expected to develop a cohesive structure for their individual educational interests within the MArch program beyond the core curriculum and toward the development of a design thesis. In thesis, a student develops a hypothesis and design strategy for a comprehensive architectural project or a design research inquiry that is carried out as an independent, critical project

—from concept to completion—under the guidance of an advising committee.

The Master of Architecture is awarded upon the satisfactory completion of an approved program of at least 282 units and an acceptable thesis. The program requires three-and-a-half academic years of residence.

Accreditation for MArch Programs in the United States

Most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit US professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted a six-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards. Doctor of Architecture and Master of Architecture degree programs may consist of a preprofessional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the preprofessional degree is not, by itself, recognized as an accredited degree. The Massachusetts Institute of Technology Department of Architecture offers one NAAB-accredited degree program: MArch (non-preprofessional degree plus 282 units and an acceptable 24-unit thesis). The next accreditation visit is in 2031.

Master of Science in Architecture Studies

The Master of Science in Architecture Studies (SMArchS) (*https://catalog.mit.edu/degree-charts/master-architecture-studies*) is a two-year degree program of advanced study founded on research and inquiry in architecture as a discipline and as a practice. The program is intended both for students who already have a professional degree in architecture and those interested in advanced non-professional graduate study. The degree may be pursued in one of six concentration areas described below. Students select one area as their intellectual home but are encouraged to explore connections in their research across the other areas as well as beyond—to other programs and departments throughout MIT. SMArchS students work closely with one or more instructors who guide them in planning their course of study and direct them purposefully towards a thesis. Notable strengths of the program are its range of concentration areas, its curricular flexibility, and cross-disciplinary research focus, as well as its high instructor-to-student ratio.

The **Aga Khan Program for Islamic Architecture** (APKIA) at MIT is dedicated to the study of architecture, urbanism, art, art and architectural history, landscape, reconstruction, and conservation in the Islamic world. The program prepares students for careers in research, art and architectural practice, and teaching. Topics covered in its curriculum include critical study of the history and historiography of Islamic architecture; urbanism in the Global South; the interaction between architecture, society, and culture;

critical art practice; and heritage studies and strategies of urban and architectural preservation.

The **Architectural Design** concentration nurtures research that contributes to current thinking about design in the field of architecture. It aims to advance architectural design by cultivating lateral thinking between design expertise and a range of allied fields, such as material sciences, media arts and technology, cultural studies, computation, sustainability, and emerging fabrication protocols. This concentration provides opportunity for designers to explore theoretical foundations of architectural design as well as its pedagogy, and to provide a platform for applied research and new forms of design practice.

Building Technology focuses on the intersection of design and technical issues for buildings that positively contribute to a more humane and environmentally responsible built world. Research within the group includes integrated architectural and urban design strategies to improve structural performance, construction and fabrication technologies, access to daylight and thermal comfort, resource accounting through material flow analysis and the life-cycle assessment, building and urban energy modeling, control design and engineering, and other technologically informed design methods. Some of the research is organized through laboratories dedicated to digital structures, urban metabolism, developing countries, sustainable design.

The **Computation and Design** group inquires into the varied nature and practice of computation in architectural design and the ways in which design meaning, intention, and knowledge are constructed through sensing, thinking, and making computationally. It focuses on developing innovative computational tools, processes, and theories, and applying them in creative and socially meaningful responses to challenging design problems.

SMArchS students in **History, Theory and Criticism of Architecture and Art** (HTC) will expand upon prior experience (which can be in design, theory, history, practice, or other post-undergraduate work) to explore compelling research that links historical or contemporary topics with methodological issues. Working alongside doctoral students in the program, SMArchS HTC students are exposed to a wide range of historical periods and theoretical approaches. It is expected that research topics will be developed in close discussion with HTC faculty, building on the required methodology seminar (taken twice) to clarify the appropriate scope and original sources required for the master's thesis. The HTC program is interdisciplinary, and students are expected to enrich their core disciplines of history and theory with inquiry into other fields as appropriate for their research interests. Opportunities occasionally emerge for HTC students to become involved in editing, organizing research symposia, or preparing exhibitions; students will also be brought into discussion with colleagues from across the discipline groups in the SMArchS program.

In **Urbanism**, research and design methods are employed to create new knowledge about cities and metropolitan regions as well as contribute to contemporary thinking and research on the future of cities and the urban environment at large. The concentration encompasses the theory and practice of urban design. This concentration has close collaboration with the Department of Urban Studies and Planning's City Design program and with the Norman B. Leventhal Center for Advanced Urbanism.

Simultaneous Master's Degrees in Architecture and City Planning
Students admitted to the Department of Architecture can propose a program of joint work in Architecture and Urban Studies and Planning that will lead to the simultaneous award of two degrees. Degree combinations may be MArch/Master in City Planning (MCP) or SMArchS/MCP. SMArchS students must apply by the January admissions of their first year at MIT. MArch students must apply during their second year. Students are considered during the regular admissions process. All candidates for simultaneous degrees must meet the requirements of both programs, but may submit a joint thesis. Neither the Department of Architecture nor the Department of Urban Studies and Planning support study plans for the simultaneous award of two Masters degrees with less than one or two regular semesters (fall and spring terms only) of residence and registration beyond the time required to complete the first degree.

Master of Science in Building Technology
This program provides a focus for graduate students interested in the development and application of advanced technology for buildings and cities. Students in this program take relevant subjects in basic engineering disciplines along with subjects that apply these topics to the built environment. The program is open to qualified students with a degree in engineering or in architecture. The latter group may also consider the Master of Science in Architecture Studies Program with a concentration in Building Technology.

The program concentrates on the development of the next generation of technology for the built environment as well as the innovative application of state-of-the-art concepts to building and urban systems. Research topics within the group include integrated architectural and urban design strategies to improve structural performance, construction and fabrication technologies, access to daylight and thermal comfort, resource accounting through material flow analysis and life-cycle assessment, building and urban energy modeling, control design and engineering as well as other technologically-informed design methods. Some of the research is organized through laboratories dedicated to digital structures, urban metabolism, developing countries, and sustainable design.

The SMBT degree is generally completed in two years and requires 66 units of coursework and the completion of an acceptable thesis.

Master of Science in Art, Culture, and Technology

The Art, Culture, and Technology Program (ACT) is an academic program and research center that facilitates artist-thinkers' exploration of art's broad, complex, global history in conjunction with culture, science, technology, and design via rigorous critical artistic practice and practice-driven theory. It focuses on individual and collaborative forms and media, including cinema, video, sound, performance, photography, experimental media and new genres, writings and publications, and conceptual, sculptural, and spatial experiments. Emphasis is also placed on critical thinking, knowledge mining, creative engagement, and the exploration of changing public and private spheres. Participation in faculty research, collaborations within the Institute, connections with visitors, and an ongoing studio seminar provide students with many opportunities to develop and exchange ideas. ACT maintains the Center for Advanced Visual Studies (CAVS) Special Collection, which preserves the legacy of the center and serves as a resource for scholars.

The SMACT degree program (*https://catalog.mit.edu/degree-charts/ master-art-culture-technology*) requires four semesters of on-campus academic work, including 135 units of coursework and the completion of a written thesis. For more information, visit the ACT website (*http://act.mit.edu*).

Doctor of Philosophy

The PhD in Architecture may be pursued in one of the following areas: History and Theory of Architecture/History and Theory of Art; Building Technology; or Design and Computation.

The PhD in Architecture may be pursued in one of the following areas: History and Theory of Architecture/History and Theory of Art; Building Technology; or Design and Computation.

The PhD program in **History, Theory and Criticism of Architecture and Art** emphasizes the study of art, architecture, and urbanism, together with the historical and methodological issues that inform or link conceptual and practical work. The Aga Khan Program for Islamic Architecture is part of this doctoral program.

The doctoral program in **Building Technology** concentrates on the development of the next generation of technology for the built environment as well as the innovative application of state-of-the-art concepts to building and urban systems. Research topics within the group include integrated architectural and urban design strategies to improve structural performance, construction and fabrication technologies, access to daylight and thermal comfort, resource accounting through material flow analysis and life cycle assessment, building and urban energy modeling, control design and engineering as well as other technologically-informed design methods. Some of the research is organized through laboratories dedicated to digital structures, urban metabolism, developing countries, and sustainable design.

The PhD program in **Design and Computation** is broadly conceived around computational ideas and digital technologies as they pertain to the understanding, description, generation, and construction of architectural form. Research topics include the mathematical foundations of shape and shape representation; generative tools for design synthesis; advanced modeling and visualization techniques; rapid prototyping and CAD/CAM technologies for physical fabrication; and the analysis of the design process and its enhancement through supporting technologies and workspaces. The mission of the program is to enrich design from a computational perspective, with clear implications for teaching and practice.

Admission and degree requirements vary somewhat in the specific areas listed above, and may be obtained from the Department of Architecture website or in correspondence with the separate areas. The residency requirement for the PhD is a minimum of two full academic years. Completion of all of the requirements for the PhD —including the dissertation—is usually accomplished in four to six years.

Each student admitted to work in the doctoral program consults closely with one principal professor in his or her area to develop a general plan of study. In all three areas, progress toward the PhD follows a sequence of required subject work, general examinations, and dissertation research, writing, and defense. Students are encouraged to take subjects appropriate to their study plans in other departments at MIT and at Harvard.

The Norman B. Leventhal Center of Advanced Urbanism (LCAU), the Department of Architecture, and the Department of Urban Studies and Planning (DUSP) have established a collaborative doctoral-level certificate program in Advanced Urbanism. At MIT, we speak of advanced urbanism as the field that integrates research on urban design, urbanization, and urban culture. The concentration in Advanced Urbanism is designed for those who have at least one professional design degree (in architecture, landscape architecture, urban design, etc.) and research interests in urbanism that would align with those of both architecture and urban studies and planning faculty. Admissions applications are submitted to either Building Technology; Design and Computation; History, Theory and Criticism of Architecture and Art; or the DUSP PhD program and must meet all specific admissions requirements of each respective PhD program. Admissions committees nominate applicants who fit the urbanism program to a joint advanced urbanism admissions committee. The selected applicants are admitted by their home department discipline group and fulfill all degree requirements of that discipline plus additional requirements for the Advanced Urbanism concentration. Tuition support and research assistantships are provided by LCAU. Additional information can be found on the LCAU website (*http://lcau.mit.edu/center/education*).

Urban Design Certificate

The Department of Architecture and the Department of Urban Studies and Planning jointly offer a Certificate in Urban Design. The purpose of the program is to provide the fundamental knowledge and

special skills required to design urban and suburban environments. Students in the MArch, SMArchS, MCP, or Master of Science in Urban Studies and Planning programs are eligible for a Certificate in Urban Design if they complete a specific set of subjects drawn from the two departments.