The Master of Advanced Architectural Design (MAAD) at Carnegie Mellon’s School of Architecture is a post-professional, design-based program that engages emerging methods of computational design, simulation, data processing, and fabrication to speculate upon future modes of architectural practice, enhanced construction methods, and alternative material manifestations within the built environment.

The four-semester interdisciplinary program leverages the School of Architecture’s and Carnegie Mellon’s core strengths in computational design, fabrication, robotics, ecological thinking, and sustainability as vehicles for knowledge acquisition and speculation. The program focuses on the creation of new insights and new knowledge—or “research”—through the design process, or “research by design.”
MAAD’s unique curriculum centers on research enmeshed with social and environmental concerns, speculative and experimental work that is deeply interlaced. The goal is consciously to probe the technical and cultural implications of a data-rich research by design; through the design process, or “research” — through the design process, or “research” — through the design process.

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Through physical investigations, computational simulation, and the design process, the program seeks to probe the technical and cultural opportunities and implications of a data-rich future in which design methodologies, construction processes, and sustainable building cycles are intrinsically interlaced. The goal is consciously speculative and experimental work that is deeply enmeshed with social and environmental concerns, with explicit ties to humanistic and cultural discourses, industry and contemporary practice.

MAAD’s unique curriculum centers on research topics and associated experimental design studios that are initiated by the core faculty to explore emerging themes, techniques, and cultural conditions. A rigorous set of required technical courses in the first year provides a foundation in technique and application. The experimental studios are accompanied by a diverse range of elective courses, offered internally and from across campus, as well as program-specific pro-seminars, to introduce and stimulate the research topics in larger contexts. These design studios and courses help prepare students for one of the distinguishing features of the MAAD program: a year-long, independently determined, but closely monitored, design research project in the second year. This capstone project leverages the power, creativity, and speculative nature of the design process to generate new knowledge, ideas, understanding, practices, or paradigms.

The extended time frame allows adequate background research, extensive methods and tools preparation, and professional documentation of the process and results. The faculty seek advanced-level projects that will position graduates as future thought leaders in architecture and allied fields relating to advanced fabrication, material performance, construction methodologies, or academia.

CMU’s emphasis on interdisciplinary learning, its implicitly computational culture, world-class robotic fabrication facilities, and a dedicated group of faculty on the cutting edge of the discipline offer unique “hands on” opportunities for experimentation and specialization in the context of a small-scale, yet globally focused, school and university.

MAAD makes extensive use of the recently established Applied Architectural Robotics Lab in the School of Architecture. This large-scale, flexible space features two industrial robot arms capable of supporting subtractive, additive, and transformative processes at significant scale. This facility complements the robust resources available within the digital fabrication lab (dFAB) and serves as a hub for faculty and student collaborations.

For more information on the labs and a list of the cutting-edge research areas being explored by MAAD faculty visit cmu.edu/architecture/maad.

Jeremy Ficca, Associate Professor, Track Chair
Ficca is the founding director of the Digital Fabrication Laboratory and member of the Applied Architectural Robotics Collective in the School of Architecture. His teaching and research engage architectural performance and systemic potentialities through materially involved practices of design and prototyping that collapse the space between design and production to explore speculative, material and computational territories.

Joshua Bard, Assistant Professor, Core Faculty
Bard’s teaching and research interrogate traditional tenets in design culture (e.g. industry-look, machine-read) through physical space, digital/analogue production, discovering new potentials for contemporary digital tools in the methodologies of craft and material culture. He is a member of the Applied Architectural Robotics Collective in the School of Architecture.

Dana Cupkova, Assistant Professor, Core Faculty
Cupkova’s work engages the social environment of the intersection of ecology, computationally driven processes, and systemic analysis. Her research is undetermined by systems thinking and focuses on creative methods to integrate desired energy harvesting systems into architectural humanities that perform on multiple interrelated scales while responding to specific climatic and socio-economic conditions.

Kai Gutschow, PhD, Associate Professor, Affiliated Faculty
Gutschow is a historian of modern architecture and theory. His teaching and research in the area of modern German architectural culture, especially the role that technology, theory, and modern media played in influencing professional and cultural developments.

Flavio Krismann, PhD, Professor, Affiliated Faculty
Krismann’s principal area of research is in computational design with particular emphasis on the formal, semantic, and algorithmic aspects of generative architecture and the development of design as computation via highly coupled parallel expressions of form and description. Krismann is an expert in computational problems in shape grammar theory and algorithms for spatial patterns.

Richard Tursky, Faculty and Assistant Director of dFAB
Tursky is a founding member of the Applied Architectural Robotics Collective in the School of Architecture. His teaching and research focus on synthesizing “traditional” and digital modes of making into a contemporary anthropic design of fabrication. His research focuses on the overlaps among advanced manufacturing, computational practices, and material culture, often prioritizing and contextualizing the urgency of the fabrication environment’s notions of craft.

MAAD is intended for early- to mid-career professionals who already hold a professional architecture degree (BArch, MArch, or international equivalent). Qualified candidates must demonstrate a familiarity with the proposed field of study and a high level of design ability. The students should be motivated through a statement of intent, a portfolio of design and research works, a transcript from the professional degree granting institution, and a CV.

The MAAD curriculum is four semesters of study, with all students expected to reside in Pittsburgh full time.

Fall First Year
Advanced Synthesis Option Studio
Pro-Seminar 1
Computing for Creative Practices
Parametric Modeling
Materials Interactions

Spring First Year
Advanced Synthesis Option Studio
Pro-Seminar 2
Research by Design Project Prep
Introduction to Architectural Robotics

Synthetic Flows

Fabrication Flows
Research by Design Project

Electives
Teaching Fellowship (optional)

Fall Second Year
Research by Design Project

Electives
Teaching Fellowship (optional)

ArchiTech candidate may apply for advanced standing based on previous coursework or professional experience, eliminating the first semester, and allowing them to begin studies in the Spring term. Advanced standing is also available to qualified CMU students with the BArch program through the Advanced Masters Program (AMP).

For more information about Carnegie Mellon’s School of Architecture, please visit cmu.edu/architecture.

For more information about the Master of Advanced Architectural Design (MAAD) program, application forms and procedures, and information about the generous financial support packages that may be available to qualified candidates, please visit cmu.edu/architecture/maad or email fa.cca@cmu.edu.

Carnegie Mellon University
School of Architecture