master of science:
material systems
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The Master of Science concentration in Material Systems (MS_MS) is a 2.5 semester (fall, winter, spring half) post-professional degree that develops a platform for project-based design research methodologies aimed at experimentation and innovation in architectural material behavior, specific assembly performance, technology integration, and responsive material systems.

Advances in the fields of materials engineering, biotechnology, nanotechnology, and microsystems are changing the role of the architect to one of active engagement with the development of new material techniques and systems integration. The concentration seeks to make contributions in developing new integrated building systems and toolkits for performance evaluation of building components, material performance, and environmental feedback. Given the renewed focus on attaining better efficiencies and more sustainable building performance, it is important for the discipline to transform previously single-purpose building system components into components that are multi-purpose, integrated, and able to communicate with each other.

The MS_MS curriculum will focus on two basic trajectories: advancing research in new material exploration through new material applications and manufacturing processes, and advancing research in technology-integrated material explorations (in areas of engineering, responsive and adaptive structures). The concentration seminars and required courses will include lab courses in Material Behavior, New Materials (smart materials, high performance materials, energy conversion materials), Fabrication and Manufacturing Techniques, Materials Selection and the Environment, Interactive Systems, Sensing Systems, Material Ecologies, and Performance Evaluation Techniques Labs. The program will leverage cross-disciplinary collaborative work linking laboratory-based hard science research with systems applications. Research work will prioritize physical exploration and testbed development as well as the development of appropriate research techniques and methods of evaluation. Research streams will include material-scale performance, fluid modeling energy evaluation, and technology-integrated material explorations with emerging manufacturing processes. The program is intended to develop new methodologies of architectural exploration that are based in cross-disciplinary collaboration.

The program draws on the broad range of research in material systems currently ongoing at Taubman College’s Digital Fabrication Lab (FABLab), as well as close ties with University of Michigan’s internationally recognized programs such as the Integrated Microsystems and Environmental Assessment, Environmental and Water Resources Engineering Lab / Hydraulics Lab utilizing laser-induced fluorescence and particle image velocimetry, Engineering Research Center for Wireless Integrated MicroSystems; and other resources at the School of Natural Resources and Environment, College of Engineering and School of Art & Design.
TAUBMAN COLLEGE
at the University of Michigan

MS_MS required courses
(36 credit hours required for the degree)

1 proseminar course (3 credits)
1 capstone course (6 credits)
1 practicum course (6 credits)
1 theory course (3 credits)
1 physical pursuits course (3 credits)
1 technology process course (3 credits)
2 architecture elective courses (6 credits)
2 cognate courses (6 credits)

Please visit www.taubmancollege.umich.edu/architecture/programs/ for detailed information about the M.S. requirements, application instructions, scheduling a visit, sample schedules, and course descriptions.

Questions? Please contact Taubman College Student Services at taubmancollegestudentservices@umich.edu or 734-763-1275.

For more information, please visit:
taubmancollege.umich.edu/msms