The theories in material systems seminar will provide a theoretical and discursive framework through which to approach material-based research and innovation within the discipline. The term material system intends to encapsulate the multi-faceted aspects of a spatial architecture and the means by which it is formed. This expands the notion of architecture and form to the conception of a dynamic entity which encapsulates activity as well as physicality. Designing within this paradigm requires the forming of new tools, skills, and methods, based in the understanding of materials - physically and also chemically – as well as the logics, processes, and machines that give them form. This course will introduce students to the various discourses that surround this topic, both historically and in current practice.

Material systems will be situated within their physical, manufacturing, effective and ecological potentials. The course will cover literature, exemplary projects within the field as well as emerging paradigms and potentials for new work in this area. Readings and discussion topics will include developing working definitions of material systems and probing questions regarding the changing landscape of architectural design research and innovation in relation to emerging areas of research in the sciences, while also developing a working vocabulary and frame of reference on topics such as systems theory, material characteristics and behavior, material effect, smart materials, biological paradigms, computation and simulation, geometry and topology, manufacturing, models and prototypes, feedback and sensing technologies, cybernetics, environmental responsiveness, and intelligent environments. Writing exercises will focus on the development of research proposals and conference papers for new work in this field.

This seminar is a required course for students in the Master of Science concentration in Material Systems (MS_MS). Other students may enroll only by permission of the instructor.