Architectural form has traditionally been implemented neglecting potential mathematical correlations within the program of a building. With the advent of advanced time-based computer modeling techniques, architects are able to embed quantifiable data into the architectural design process. The inherent dynamics of the architectural program can therefore generate traditional relationship diagrams. Since these diagrams carry the ever-changing programmatic behavior of a building, generative geometry derived from diagrammatic programmatic connections allows designers to implement quantifiable data into the architectural design process. Traditional line-based systems can also generate a structure of forms that incorporate architectural space-form relations. Based on this approach to design, morphology can be studied using the time-based mathematical models inherent in modern digital tools.

The first half of the semester will start with an introduction to industrial design using NURBS, Polygons and Subdivision Surfaces using Autodesk Maya and Alias Automobile. From the industrial design introduction, we will focus on the topological study of form using anamorphic time-based geometry tools. Following recent developments in software simulation of physics and topology, we will study particles and fluids as morphological systems with volumetric characteristics, as opposed to following the normative approach of regarding fluids as just vector systems. Also, we will analyze how the generative morphological behavior of Fractals can generate 'structures' of form that incorporate space-form relation. Finally, we'll study the "design" of a material using Maya's nCloth system, which allows for a mesh to have structural behavior by assigning material properties to its topology.