In times of uncertainty, form needs to adapt to changing conditions. As the climate emergency accelerates, designing for site conditions such as micro-climate and resource availability becomes more critical. Designers need to control geometry so that buildings and spaces can work with natural systems, inhabitant needs, urban infrastructure, and cultural preferences. With parametric design, articulating an idea in geometric or mathematical relationships pushes a designer to understand its core essence and reveals a spectrum of possibilities appropriate for different situations.

Students will explore how design computing can increase perceptions, enrich design options, and improve design decision-making. This course develops skills for generating beautiful design variations, and evaluating the results with aesthetic judgement and and simulation tools. Using craft and computation together, students will develop sculptural folding experiments with parametric design and then try overlay drawing about inhabitation. Students will explore design as discovery, looking at Art and Nature (growth, evolution and motion) for inspiration.

The class will coach students on using Rhinoceros' Grasshopper platform, which opens up a spectrum of free and low-cost plug-in design applications that span in scale from jewelry to aerospace, and realms including lighting, structure, water run-off, energy, acoustics, etc. Students will try out solar simulation to understand how Grasshopper analysis plug-ins empower designers to see how adjusting a form affects performance.

No prior knowledge of Rhino Grasshoppper is needed. Students must to have access to Rhinoceros software running on Windows. The 3-credit course will meet twice a week for presentations, hands-on practice, discussions and reviews of student work.