



CEE 501.067 – Deployable and Reconfigurable Structures

Winter 2020 – Mon/Wed – 2:30-4:00pm – 2147 GGB

This course will cover the theory, analysis, and design of structures that deploy and reconfigure for functional or adaptive purposes. Applications in civil engineering, mechanical engineering, architecture, aerospace, robotics, and more will be explored. Topics in the class will include:

Structural Types:

- Bar linkage systems
- Pantographs (scissor mechs.)
- Origami structures
- Bi/Multi-stable systems
- Metamaterials and unit cells

Theoretical Concepts:

- Deployment kinematics
- Stability & boundary conds.
- Geometric constraints
- Mechanical behaviors
- Energy formulations

Analysis and Design:

- Matrix analysis methods
- Load cases and design
- Materials and fabrication
- Actuation methods
- Buckling and stress

Prof. Evgueni Filipov (filipov@umich.edu) Course details at drsl.engin.umich.edu/courses/

