MATH 8600 Topics in Applied Mathematics
Multiscale Theory, Modeling, and Computation
Spring, 2018
Mitchell Luskin
TTh 2:30 - 3:20 PM,  F 3:35 - 4:25 PM
Vincent Hall 209
(Time and room may be changed to accommodate student schedules. Please contact the instructor at luskin@umn.edu to request time change.)

We will present an introduction to multiscale modeling, analysis, and computation. Averaging, homogenization, coarse-graining, bifurcation and stability, and stochastic methods will be presented. Applications will be given to elasticity, fluid dynamics, and electrodynamics.

The prerequisites are undergraduate ordinary and partial differential equations. All other introductory material will be covered in the course notes and lectures. Some material will be taken from the following references, but it is not necessary to purchase the books:

2D heterostructure with five incommensurate monolayers
Scattered electric field for semi-infinite graphene sheet
Fractal density of states for coupled incommensurate chains