Models and Methods of Applied Mathematics
www.math.oregonstate.edu/~mpesz/420-520_S19
MWF 11:00-12:00pm, Instructor: M. PESZYSNSKA

Class content:

- Models and methods: discrete and continuous models; linear analysis, equilibrium and minimum principles; introduction to calculus of variations and principal component analysis; orthogonal expansions; continuous and discrete Fourier analysis; introduction to constrained and unconstrained optimization; least squares and inverse problems.

- Guided projects and activities using MATLAB: (As time permits)
  - applications of Fourier techniques: music, touch-tone dialing, bar-code reading,
  - image reconstruction and deblurring, data clustering, web search engines and recommender systems,
  - introduction to machine learning and pattern recognition
  - linear and quadratic programming for solving combinatorial,
  - GPS, seismic inversion, and nonlinear least squares.

PREREQUISITES: MTH 256 and MTH 341 and junior status
TEXT: course notes plus additional materials will be provided.