

MTH 420/520 (Spring 2019)

Models and Methods of Applied Mathematics

www.math.oregonstate.edu/~mpesz/420-520_S19

MWF 11:00-12:00pm, Instructor: M. PESZYNSKA

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.

