MA (BMA) 574

Time: 1:30 - 2:45 MW
Place: Withers 150
Instructor: Ralph Smith
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Web: http://www4.ncsu.edu/~rsmith/


Computing: We will use MATLAB and Maple.

Grades: The gradescale is: 90-100 A-,A; 80-89 B-,B,B+; 70-79 C-,C,C+; 60-69 D-,D,D+; below 60: F.
The grades are based on the following coursework:

- Homework and Projects: 60 %
- Midterm Exam: 15 %
- Final Exam (May 2, 2016): 25 %

Course Topics:

- Acoustics and Fluids
  - Acoustics and wave phenomena
  - Fluid principles: Euler and Navier–Stokes models
  - Experiments: Non-Newtonian fluids, speed of sound measurement

- Materials Concepts and Structural Models
  - Fundamentals of elasticity and viscoelasticity
  - Structural models for rods and beams
  - Smart material applications
  - Laboratory experiment: beam vibrations

- Numerical Solution Techniques for PDE
  - Finite difference techniques
  - Galerkin and finite element methods

- Surrogate and data-driven models
  - Regression-based and Gaussian process models
  - Dynamic mode decomposition models

Academic Integrity and Disabilities Information: This is provided at the following web sites:
http://www.ncsu.edu/provost/academic_regulations/integrity/reg.htm
http://www2.ncsu.edu/ncsu/stud_affairs/counseling_center/dss/