MA (BMA) 573

Time: 1:30 - 2:45 MW
Place: HA 265
Instructor: Ralph Smith
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Text: Class notes.

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:	25 %

Course Topics:

- Motivating Examples and Modeling Concepts
  - Dimensional analysis and scaling
- Compartmental Analysis and Conservation Laws
  - Advection, convection and diffusion processes
  - General transport equations
  - Conservation of mass and momentum
  - Traffic flow and analysis
- Heat Transfer
  - Laboratory experiment: Heat conduction in a rod
- Population Models
- Analytic solution techniques for PDE
  - Method of characteristics
  - Separation of variables
- Numerical solution techniques for PDE
  - Finite differences
  - Finite elements
- Validation and Verification Techniques

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/`