MA 540 Uncertainty Quantification for Physical and Biological Models

Time: 11:45 - 1:00 TH
Place: SAS 2106
Instructor: Ralph Smith
Office: SAS 4140, Tel: 515-7552
Email: rsmith@eos.ncsu.edu
Web: http://www4.ncsu.edu/~rsmith/


Computing: We will use Matlab and provided software

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 coursework will consist exclusively of projects.

Course Topics:
- Motivating applications and prototypical models
- Fundamentals of probability, random processes and statistics
- Representation of random inputs
- Parameter selection techniques
- Frequentist and Bayesian model calibration
- Uncertainty propagation in models
- Stochastic spectral methods and sparse grid techniques
- Prediction in the presence of model discrepancy
- Surrogate models
- Global sensitivity analysis

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/