

ASEN 6412

Uncertainty Quantification (UQ)

Spring 2020

Class meetings: MW 10:00 AM - 11:15 AM in AERO 232

Instructor:

Alireza Doostan
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Office hours: MW noon - 1:30 PM, otherwise by appointment.

Prerequisites:

Prerequisite is a *B* or better in ASEN 5070, APPM 5520, APPM 5570, ECEN 5612, or equivalent courses with instructor consent.

References:

- R. Smith, Uncertainty Quantification: Theory, Implementation, and Applications, SIAM, 2013
- R. Ghanem and P.D. Spanos, Stochastic Finite Elements: A Spectral Approach, Dover, 1991
- D. Xiu, Numerical Methods for Stochastic Computations: A Spectral Method Approach, Princeton University Press, 2010
- O. P. Le Maitre and O. M. Knio, Spectral Methods for Uncertainty Quantification: With Applications to Computational Fluid Dynamics, Springer Verlag, 2010
- R. Aster, B. Borchers, and C. Thurber, Parameter Estimation and Inverse Problems, Elsevier Academic Press, 2005

Grading:

- Homework (35%)
- Mid-term exam (20%)
- Final project (35%)
- Class attendance/discussion participation (10%)

Some notes:

Homework problems involve combinations of analytical, numerical, or paper review tasks
Please answer homework problems as clear and clean as possible. 10% of the homework grade goes to clarity
No late homework submissions will be accepted unless there is an emergency
Sharing thoughts on homework problems is encouraged; however, every student must submit his/her homework

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