ENME 465 Probability-Based Design
Course Syllabus

Course Description
Review of probabilistic distributions, introduction to pseudo-random number generation, and algorithms to produce probability distributions using Monte Carlo simulation via Matlab and other approaches to best design probabilistic engineering problems.

Course Prerequisites
- ENME 392 Statistical Methods for Product and Processes Development
- MATH206 or other matlab course

Required Course Text:
- Simulation, by Sheldon M. Ross (Fifth Edition)

Course Objective
To provide an introduction to Monte Carlo simulation emphasizing technical aspects as well as applications.

Instructor
Dr. Steven A. Gabriel
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Grading
The overall course grade will be derived from the following areas:
- Weekly homeworks score (10% of course grade)
- Three pre-announced, in-class intermediate exams:
  - best intermediate exam score: 25% of course grade
  - middle intermediate exam score: 15% of course grade
  - worst intermediate exam score: 10% of course grade
- Case Study 1 (5% of course grade)
- Case Study 2 (5% of course grade)
- Case Study 3 (5% of course grade)
- Final exam score (25% of course grade)

Course Policies
Students are encouraged to attend all lectures since the exams and the homeworks will be closely related to material discussed in lectures. Students will complete the homeworks by themselves. Homeworks will generally be given out each week on Thursday and due at the start of class one week later on that next Thursday (unless otherwise specified). No late homeworks will be accepted unless it’s a family or medical emergency with supporting documentation. In the case of snow/weather emergencies assignments will still be due as these are to be sent electronically via blackboard (or email-- to be determined with the
The course is subject to the Code of Academic Integrity available on the web. The Code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University has a legal obligation to provide appropriate accommodations for students with disabilities. Please inform Dr. Gabriel of any accommodations needed relative to disabilities. Also, University of Maryland policy states that students should not be penalized due to observances of their religious beliefs. Please inform Dr. Gabriel of such instances well in advance so that appropriate steps can be taken.

Short Bio on Dr. Gabriel

Academic Experience: Besides teaching at University of Maryland, Dr. Gabriel has held appointments in the Mathematical Sciences Department at The Johns Hopkins University, and in the Engineering Management and Systems Engineering Department at The George Washington University. In addition, he has served as a postdoctoral researcher in the Mathematics and Computer Science Division at Argonne National Laboratory.

Industry Experience: Dr. Gabriel has over 25 years of industry and academic experience involving mathematical modeling of engineering-economic systems with applications in energy, transportation, service performance, and operations management. His specialties include optimization/equilibrium modeling, econometrics, decision support systems, and software development. His most recent industry experience includes 5 years as a Project Manager at ICF Consulting (www.icfconsulting.com) involving projects with their oil and gas group (www.icf-oilandgas.com) as well as their electrical power group.