ECE 5332   Stochastic Optimization   Syllabus

Instructor:

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Course Purpose:

Introduction to Stochastic Optimization and its Applications.

Course Description:

This "seminar-style" course will focus on the theories, algorithms, and applications of Stochastic Optimization in engineering problems. Students who enroll for this course will meet with the instructor at the beginning of the semester to select their own special topic of interest related to Stochastic Optimization to work on during the semester. Each student will provide a mid-term progress report, a final project report, and a final presentation.

Prerequisites:

This is a graduate course and enrolment is restricted to **graduate students only**. There is no official pre-requisite for graduate students at the time of enrolment. However, basic knowledge of linear and convex optimization, linear algebra, and random processes will be helpful.

Lectures:

This course does not include lectures.

Textbook:

The following textbook is recommended for the purpose of self-study:

Kurt Marti, *Stochastic Optimization Methods*, Springer, 2004.

Grading:

Mid-term Progress Report – 20%

Final Project Report – 60%

Final Project Presentation – 20% (Presenting: 15%, Attending: 5%)

Important Dates

Orientation: January 24, 2012

Deadline to Select Project Topic: February 14, 2012

Deadline to Submit Mid-Term Progress Report: March 6, 2012

Deadline to Submit Final Project Report: April 24, 2012

Presentations: Last week of April / First Week or May

Class Policies:

Project Topic: Students can choose their topic of interest related to Stochastic Optimization. The topic may or may not be related to their graduate research, as long as it is related to Stochastic Optimization. The topic must be approved by the instructor prior the deadline. The project must be individual. Joint projects will not be approved.

Mid-term Progress Report: It should be a two-page report fully explaining the **mathematical formulation** of the optimization problem that the student intends to solve. In addition, the mid-term report should briefly explain one or two methods that the students think could be used in order to solve the formulated stochastic optimization. The mid-term progress report must be submitted prior the deadline. The progress reports will be graded by the instructor.

Final Project Report: It should be around 10 pages clearly explaining: 1) the mathematical formulation of the optimization problem of interest, 2) how the optimization problem of interest is solved, along with details with the applied solution method, and 3) simulation results clearly showing that the stochastic problem of interest has been solved. The final reports will be graded by the instructor with respect to the above three aspects.

Final Presentation: Each student will give **15 minutes presentation** (between 10 to 15 slides) on his/her final project during the last week of classes. Just like the final project, the

presentation must be done individually. The presentation should clearly and briefly explain 1) the mathematical formulation of the optimization problem of interest, 2) how the optimization problem of interest is solved, along with details with the applied solution method, and 3) simulation results clearly showing that the stochastic problem of interest has been solved. The final presentation will be graded by the instructor with respect to the above three aspects, along with clarity of the presentation. Attending all presentations is mandatory for all students and will affect their grades as mentioned earlier.

Academic integrity: It is the aim of the faculty of Texas Tech to foster a spirit of complete honesty and a high standard of integrity. Every aspect of the project obtained from a textbook, a paper, or any other source must be clearly cited with appropriate references. The simulations have to be student who will present the result. Any attempt of students to present as their own any work that they have not honestly performed is regarded by the faculty/administration as a serious offense and renders the offenders liable to suspension.

ADA Compliance Statement:

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.