Math 636: Mathematical Modeling
5:30-6:45pm MW, Classroom GMCS308, Fall 2013

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Office Hours: 4:00-5:30pm MW or by appointment

Text: *Mathematical Modeling*, 4th ed., by Mark M. Meerschaert, Academic Press, 2013, 365pp, ISBN: 978-0-12-386912-8

Prerequisites: Math 254 and Math 337, or Math 342A and 342B, or Aerospace Engineering 280.

Topics covered in this course: We will cover part of the materials in each chapter of the text, including optimization models, dynamic models and numerical simulations, and probabilistic and statistical models. In addition, we will cover dimension analysis, simple climate models, and the models from students' interest.

Computing: Mathematics and statistics software, such as Matlab, Maple, R and SAS, will be useful for this class when finding and displaying model solutions.

<u>**Grading Policy:**</u>	The final grades for this class will be determined as follows:	
	Homework assignments (3 times)	45%
	Literature review and report writing (2 times)	30%
	Final project	25%
	Total-------------------------------------	100%

<u>**Class Attendance:**</u>   The students are required to attend all the classes. The class attendance will be taken randomly in lectures. Those who attend every lecture will receive a 2% bonus.

<u>**Note-taking:**</u>   Each student should have a plan to build a portfolio/folder for this class. Class notes are an important part of the folder. Each student should take class note. A detailed and neat Math 636 folder will earn 1% bonus. The instructor will check the Math 636 folder toward the end of the semester.

Learning outcome: Students are expected to master the mathematical methods of advanced models from natural and social sciences, and engineering. Students will be able to develop and understand models and corresponding mathematical structures. They will also be able to solve the models, either analytically or numerically, and interpret the modeling results using statistical methods. They will master basic principles of model validation.