

M435 Projects in Applied Mathematics

Topics

This course provides students with an opportunity to explore a range of applications of mathematics via in-depth projects. In spring 2011 four projects will be selected from the following topics:

- Nonlinear Data Fitting
- The Transportation Problem
- Processing Large Data Sets
- Game Theory
- Dynamical Systems Modeling
- Simulation Modeling

Prerequisites

Students should have M229 and ability to program in Matlab. Generally it is recommended that you take this course in your final year of study.

Instructor

Professor Michael Kirby, kirby at math dot colostate dot edu. Weber 211.

RAMCT

The class will have a RAMCT site. Please use this to email me to ensure a quick reply. All reports will be uploaded to RAMCT in pdf format.

Grading

The final grade will be determined the evaluation of

- $N \geq 4$ reports (submission in LaTeX required) 80% (80/N% each)
- class participation 5% (zero credit if more than one unexcused absence)
- final report presentation 15%

Groups

All work will be done in groups. The groups will generally be different for each project. Each group will receive a single grade for each project. The recommended group size is three students.

Project Reports

Each project will be presented in report form using the mathematical text processing language *latex*. The components of a report include (with grading rubric)

- Introduction to the problem (10 points)
- Mathematical formulation of the problem (20 points)
- Results (15 points)
- Analysis (30 points)
- Future Work and Conclusions (10 points)
- Bibliography (5 points)
- Labeled figures with captions referred to in the text (10 points)

The Mathematical Contest in Modeling

Participation in the MCM is optional but recommended. The MCM will take place February 10 - 14, 2011. See <http://www.comap.com/undergraduate/contests/mcm/> for more details.