

SYLLABUS
MTHT 591 – Data Analysis and Mathematical Modeling
Autumn 2011

Instructor: Dr. Fred Thulin

Contact Information: fthulin @ uic.edu, 312.413.7872
Office location: 426 SEO

Meeting Times: Thursday evenings, starting Aug. 25, 2011, 5:00-8:00 PM. We will meet 15 times.

Meeting Place: 2087 SEL

Course Description: The second CTTI mathematics course is entitled Data Analysis and Mathematical Modeling and is scheduled to meet for 15 weeks from Thursday Aug. 25, 2011, 5:00-8:00 PM through Thursday December 8 5:00-8:00 PM. This course will introduce you to mathematical modeling concepts directly related to high school mathematics and introduce you to sensors and data loggers that you can use in your own classroom, which could be included in an innovative fourth year mathematics course at your high school in the future. The course will integrate science with the mathematics to create a hands-on, experiential learning environment that makes the connection of mathematics to the real world evident and interesting. As mathematics teachers, we have all encountered the refrain, "But what is this good for?" This course provides numerous examples connecting the real world with linear functions, quadratic functions, power functions, exponential functions, and trigonometric functions. Experiments will include Beer's Law, Boyle's Law, free fall, Newton's law of cooling, speed of sound, power law for the relationship between light intensity and distance from source and others. Along the way, we will also examine on an intellectual level the special relationship between mathematics and science. We will discuss the similarities and differences between these two disciplines as well the fundamental way mathematics is used in science.

Text: There is no assigned textbook for the course. Resources will be distributed and/or recommended.

Calculator: We will use a TI-84 calculator extensively. Please bring one to every class.

Attendance and class materials: Attendance is required. You must contact me in advance if it is necessary to miss a class.

Homework: Homework will be assigned every week, and is due the following week, unless specified otherwise.

Project: There will be a final project to be presented in the last class.

Grading: Grading will be based on homework (30%), class participation (30%) and the final project (40%).