

THE SCHILLING SCHOOL FOR GIFTED CHILDREN

2008-2009 Academic Year

Applied Science and Mathematics

Dr. Douglas G. Frank, Instructor

CLASS TIME: Monday & Wednesday Mornings

TEXT: *None*

OUTLINE AND OBJECTIVES: After several introductory classes to review material and establish ability and interests, philosophy of science, and scientific intuition, we will work on a series of projects intended to increase scientific literacy and experience with practical applications of science and mathematical methods. In particular, we will emphasize projects that apply and reinforce the calculus that they are learning in their sister class.

One of our first projects will be to revisit, and hopefully complete the work we began last year on various approaches to lighting, and to submit the paper for publication if warranted. We will also prepare a poster for submission to the AAAS meeting in Chicago (Feb '09), which we will plan to attend.

We will work on a series of projects of current interest and that pique student interest. The bowling industry has been a growth area in my business (www.ToolsForAnalsis.com), and we may look at some other real-life challenges as well.

For example, the election season is upon us...and is quite current and relevant. In 2004, a similar class predicted the outcome of the election as an application of differential equations using modeling with periodic functions. Weather and climate also rely extensively on computer and mathematical modeling, and we may perform statistical analyses which illuminate our understanding of the current debates on climate change.

Students will be required to keep notes in class (lab notebook), and assignments will be given which enhance our progress on whichever application we are addressing; typically research, spreadsheet analyses, large calculations, and reports.

Laptops are optional, but are welcome and encouraged.

Important: Students MUST bring to each class:

- Lab Notebook
- Ball point pen
- Calculator (graphing calculators discouraged. A \$10 science/engineering calculator will be fine.)