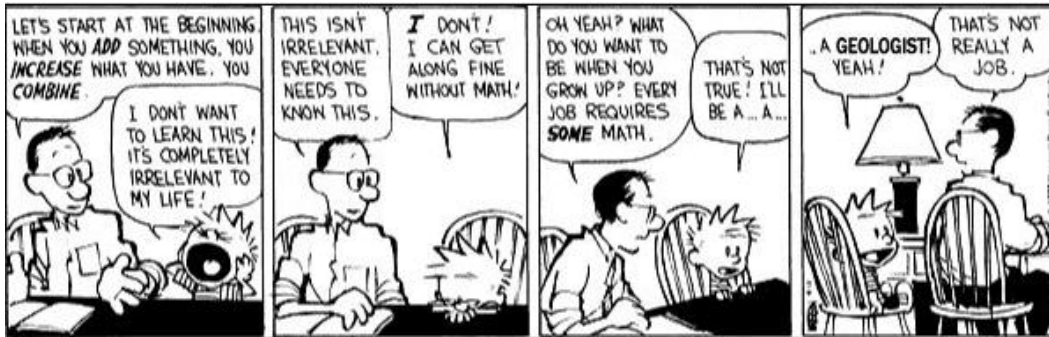


EART 111
Mathematics in the Earth Sciences
Fall 2009 Syllabus
Details

Brief Description Vectors, 3D geometry, partial differentiation, vector calculus, matrix algebra, differential equations. Emphasis is on practical applications in the Earth Sciences.

Why do it? Almost any branch of modern Earth Sciences requires some quantitative skills, and employers' expectations have risen accordingly. EART 111 is designed to equip you with the skills to cast geological problems in mathematical terms, and to solve them.



Prerequisites ES 5,10 or 20 and Maths 11B or 19B.

Textbooks I have produced a reader (available from the bookstore) that makes use of chapters from two textbooks:

E. Kreyszig, Advanced Engineering Mathematics, 8th ed., Wiley

J. Stewart, Calculus (Early Transcendentals), 5th ed., Brooks/Cole.

Webpages Lecture outlines, suggested problems etc. can be found at <http://es.ucsc.edu/~eart111/>

Office Hours and Discussion Sections

F.N. office hours 2pm-3pm Tues and Thurs (A219 E&MS) or by appointment (fn-immo@es.ucsc.edu)

C.H. discussion section TBD; office hours TBD, or by appointment. (harrison@pmc.ucsc.edu)

Grading

I grade on a curve, with an *approximately* B average. The balance of homework and test scores will be 60/40. The pass mark is roughly 50%. One caveat: you *must* pass the Final to pass the class, because the Final is the only work that I know for sure you (as opposed to someone else) are taking. *If you fail the Final, you fail the class.*

Homework will be posted on the website on Thursday, and is due at the end of class on the following Thursday. Each extra day that expires results in your score being reduced by 10%. The only way of avoiding this penalty is if you let me know *in advance* that your homework is going to be delayed.

Problem Set and Study Guidelines

- Each week the first question will be a “warm-up”. The other questions are meant to be more challenging, but if you are spending more than an hour per question, you might want to ask for help.
- Make your answers legible and organized. Illegible or disorganized answers are unlikely to be marked favourably.
- If you can’t finish a problem, do as much as you can and tell me where you’re headed. I can’t give you partial credit if you don’t give me something to work with.
- Keep track of units. Many errors (up to and including loss of multi-million dollar spacecraft) arise from unit confusion.
- Think about your answer. If it makes no sense, say so; you’ll get some credit for recognizing there’s a problem.
- Don’t wait until the last moment to start your problem set.
- Working in a group is fine, but don’t just sit on the sidelines and watch, since this can lead to mechanical copying of other people’s work. If I suspect you of **plagiarism**, I may ask you to duplicate at the blackboard (without notes) what you did in your homework. Make sure that you are able to do this.
- It is unfortunate, but true, that the only way to get better at maths is *practice*. I have produced a list of suitable practice questions from the two textbooks (see the website).
- Make use of office hours and discussion sections.
- **Ask me in class if there’s something you don’t understand!**