

# Math 514: Applied Mathematics I

Course Information and Syllabus – Fall 2011

## Instructor:

Prof. Jon M. Collis  
Office: Stratton Hall 218, x2311  
Email: jcollis@mines.edu  
http: www.mines.edu/~jcollis/

## Office hours:

Monday: 14:00 – 15:00  
Wednesday: 12:00 – 13:00  
Friday: 10:00 – 11:00

Also by appointment! – contacting me via email is the best way to contact me.

## Course Objectives and Goals

Introduce some of the basic concepts and varieties of methods used in the broad field of applied mathematics. Most concepts are presented in the context of wave motion.

1. Review waves, the wave equation, and their basic properties. Water waves.
2. Continuum mechanics.
3. Acoustic waves.
4. Elastic waves.
5. Electromagnetic waves (if time permits).

## Prerequisites

Math 455 or equivalent first course in partial differential equations.

## Textbooks

D. J. Acheson, *Elementary Fluid Dynamics*, Clarendon Press, Oxford, 2003 – required.  
J. Billingham and A. C. King, *Wave Motion*, Cambridge University Press, 2000 – suggested.

## Student Evaluation

|                    |     |
|--------------------|-----|
| Homeworks          | 80% |
| Final Exam/Project | 20% |

Homework will be graded on a three point system: Each problem will be marked with a 3 (meaning you are 100% correct), a 2 (you made a minor error but basically were able to solve the problem), a 1 (you attempted the problem), or a 0 (for not trying at all).

## Late Work

The general policy for this course is that late work is NOT acceptable. In reality, there will be a few rare situations when I will accept late work. The procedure for late work is as follows: a) you must receive permission (either via email or in person) PRIOR TO submitting late work, b) when the work is complete, you should submit it to me and indicate that it is late on the assignment, c) your work will be graded and late points may be assessed, generally at the rate of one point per day late.

## How to Do Well in this Course

- Follow along in class. When I ask questions, try to answer them (either for the class or just for yourself). Ask questions if you don't understand (either in class or during office hours).
- Read the book, especially the sections that I mention are worthwhile but I don't have time to cover in class.
- Keep a notebook of all your lecture notes as well as all your graded homework. This makes studying easier and more efficient and will result in a higher grade.