<b>MATH-348</b>	Advanced Engineering Mathematics		
http://ticc.mines.edu/ Spring 2010			
Text	E. Kreyszig, <u>Advanced Engineering Mathematics</u> , $9^{th}$ edition, Wiley, New York, 2006		
Course Description	Introduction to partial differential equations, with applications to physical phenomena. Fourier series, Linear Algebra with emphasis on sets of simultaneous equations. Prerequisite: MATH225 or equivalent.		
Sections	B : 11:00am-11:50amLocation: Coolbaugh Hall 131C : 1:00pm-1:50pmLocation: Green Center 211D : 2:00pm-2:50pmLocation: Alderson Hall 340		
Instructor Info	Instructor: Scott StrongPhone: 303.384.2446Office: Chauvenet Hall 266Email: math348.spring2010@gmail.comOffice Hours: MWF 12-1Monday 3-5		
Grading	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
Important Dates	First Day of ClassJanuary 13Last Day to Drop Without a WJanuary 28President's DayFebruary 15Spring BreakMarch 15-19Last Day to WithdrawMarch 30E-DaysApril 8-10Last Day of ClassMay 5		
Academic Honor Code	I pledge to uphold the high standards of academic ethics and integrity expressed by the Colorado School of Mines Student Honor Code by which I am bound. In particular, 'I will not misrepresent the work of others as my own, nor will I give or receive unauthorized assistance in the performance of academic coursework.' I understand that my instructor will report any infraction of academic integrity to the Department Head and that any such matter will be investigated and prosecuted fully.		
Flu Policy	All students are advised to be familiar with CSMs policy regarding the make-up of work missed due to excused absences. This policy may be found in the Bulletin. If a student is ill and exhibits flu-like symptoms, they should not attend class, labs, or exams. For this particular flu season, the Centers for Disease Control are discouraging those who are ill and without serious complications from visiting a health clinic or physician thus it will be difficult for students to obtain written documentation of their illness for the Associate Dean of Students and for faculty. In order for an absence based on illness to be excused, the student must normally communicate directly with the Associate Dean of Students or his/her instructors. To make this notification process easier, particularly in the case of students suffering flu-like symptoms, we have created a web-based certification system, and strongly encourage students to use this system to automatically notify all of their instructors regarding their illness. The link to this web-based form is: http://inside.mines.edu/Flu		

Section	Pages	Key Concepts
7.1, 7.2	272-286	Algebra, Associativity, Commutativity, Distribution,
		Inner-Product, Outer-Product, Matrix Product, Sym-
		metric, Skew-Symmetric
7.3,7.5	287-295, 302-	Linear System, Existence and Uniqueness, Gauss Elim-
	305	ination, Row Echelon Form, Fundamental Theorem for
		Linear Systems, Homogeneous and Nonhomogeneous sys-
		tems.
7.7-7.8	308-314	Determinant, Cramer's Theorem, Matrix Inverse, Or-
		thogonal Matrix
7.4, 7.9	296-301, 323-	Linear Dependence, Basis, Dimension, Rank, Span, Row
	329	Space, Column Space, Null Space, Vector Space, Inner
		Product Space
8.1	334-339	Eigenvalue, Spectra, Eigenvector, Eigenfunction
8.3	345-348	Symmetric, Skew-Symmetric, Orthogonal, Transforma-
		tions, Spectra
8.4	349-355	Eigenbasis, Diagonalization, Quadratic Form, Definite-
		ness
Review of	N/A	Function, Even, Odd, Periodic Function, Trigonometric
Functions		Function, Factorial Function, Gamma Function, Bessel
		Function of the First Kind
11.1, 11.3	478-486, 490-	Fourier Series, Fourier Coefficients, Fourier Series of Func-
	495	tions with Symmetry
11.2	487-489	Domain Scaling Properties
11.4	496-498	Euler's Formula, Complex Fourier Series
11.6	502-505	Trigonometric Approximation
11.7-11.8	506-517	Fourier Integral, Fourier Sine/Cosine Transform
11.9	518-528	Fourier Transform, time/space domain, frequency do-
		main, spectral representation, convolution, Green's func-
		tion, Frequency Response
Review of DE,	535-537	Differential Equation, Vocabulary, Linear ODE's, Bound-
12.1		ary Value Problems, Simple Harmonic Oscillators,
		Bessel's Equation
Flows and	N/A	Divergence Theorem, Conservation Equation, Constitu-
Conservations		tive Equation, Fourier's Law of Heat Conduction
Laws		
12.5	552-561	Boundary Conditions, Separation of Variables, Periodic
		Extension
Inhomogeneity	N/A	Extension of Fourier Methods
12.2-12.4	538-551	Ideal Wave Equation, Vibrations, D'Alebert's Solution
12.0	502-508	Cauchy-Problem, Heat Kernel
12.9	579-586	Multivariate Chain Rule, Laplacian in Polar Coordinates,
10.10	F07 F02	Fourier-Bessel Series
12.10	587-593	Cylindrical and Spherical Geometries
12.11	094-090	Laplace Iransforms and PDE's
ACOUSTICS	N/A	Linear Approximations and Small Amplitude Vibrations

## MATH348 - Spring2010 - Tentative Schedule

A listing of recommended problems from the text will be given in the header box of each 'Lecture Notes' posted on the ticc website.