Text	E. Kreyszig, <u>Advanced Engineering Mathematics</u>, 10th edition, Wiley, New York, 2011
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	A : 9:00am-9:50am Location: BBW210 B : 11:00am-11:50am Location: BBW210 C : 1:00pm-1:50pm Location: BBW210
Instructor Info	Instructor: Scott Strong Phone: 303.384.2446 Office: Stratton Hall 205 Email: math348@gmail.com Office Hours: MWF 12-1 Or by Appointment
Grading	Exams (2 @ 25% each): 50% Final Exam: 30% Discretionary: 20% Total: 100% 90 - 100% A 80 - 89% B 70 - 79% C 60 - 69% D Below 60% F
Important Dates	First Day of Class January 11 Census Day January 26 Presidents Day February 20 (No Class) Spring Break March 12-16 E-Days March 29-31 Last Day to Withdraw April 10 Last Day of Class May 2
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 Sylean 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

MATH348 - Spring 2012 - List of Topics

Section	Pages	Key Concepts
Review of DE, 12.1	535-537	Differential Equation, Vocabulary, Linear ODE's, Boundary Value Problems, Hyperbolic Trigonometric Functions, Bessel's Equation, Gamma Function, Bessel Function of the First Kind
Review of Functions	N/A	Function, Even, Odd, Periodic Function, Trigonometric Function, Integral Properties of Trigonometric Functions
11.1, 11.3	478-486, 490-495	Fourier Series, Fourier Coefficients, Fourier Series of Functions 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 domain, spectral representation, convolution, Green's function, Frequency Response
Flows and Conservations Laws	N/A	Divergence Theorem, Conservation Equation, Constitutive Equation, Fourier's Law of Heat Conduction
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
12.6	562-568	Cauchy-Problem, Heat Kernel
12.9	579-586	Multivariate Chain Rule, Laplacian in Polar Coordinates, Fourier-Bessel Series
12.10	587-593	Cylindrical and Spherical Geometries
12.11	594-596	Laplace Transforms and PDE's
Acoustics	N/A	Linear Approximations and Small Amplitude Vibrations
7.1, 7.2	272-286	Algebra, Associativity, Commutativity, Distribution, Inner-Product, Outer-Product, Matrix Product, Symmetric, Skew-Symmetric
7.3,7.5	287-295, 302-305	Linear System, Existence and Uniqueness, Gauss Elimination, Row Echelon Form, Fundamental Theorem for Linear Systems, Homogeneous and Nonhomogeneous systems.
7.7-7.8	308-314	Determinant, Cramer's Theorem, Matrix Inverse, Orthogonal Matrix
7.4, 7.9	296-301, 323-329	Linear Dependence, Basis, Dimension, Rank, Span, Row 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, Transformations, Spectra
8.4	349-355	Eigenbasis, Diagonalization, Quadratic Form, Definiteness

Spring2011 - Tentative Course Schedule

Week of	Section	Week of	Section
January 9	ODE Review	**March 6**	12.9
January 16	BVP, 11.1, 11.2	**March 20**	12.11
January 23	11.3, 11.4	**March 27**	Applications
January 30	11.7, 11.8	**April 3**	Review
February 6	11.9, Applications	**April 10**	7.1, 7.2, 7.3, 7.5
February 13	Review	**April 17**	7.7, 7.8, 7.4, 7.9
February 20	12.1, 12.3	**April 24**	8.1, 8.2
February 27	12.4, 12.5	**May 1**	8.4, 8.5

Recommended Problems from 9th Edition

Section	Problems	Section	Problems
11.1	2, 3, 6, 9, 11, 17, 18, 19, 22	12.11	4, 5
11.2	1, 5, 7, 9, 11	7.1	5, 7
11.3	2, 3, 12, 13	7.2	3, 5, 8, 13, 19, 20
11.4	2, 9, 11	7.3	1, 4, 8, 16
11.7	3, 7, 9, 14, 15	7.4	2, 4, 6, 7, 14, 20
11.8	1,5 ,6	7.7	5, 6, 13, 15, 16, 19, 24(a,b,c)
11.9	2, 3, 9, 14(a)	7.8	7, 8, 15, 17, 19
12.1	17, 19, 22, 23, 24, 26(c), 27	8.1	3, 5, 13, 14, 16, 19
12.3	2, 9	8.3	5, 7, 10, 17
12.4	12, 17	8.5	5, 6, 9, 12, 16
12.5	13,18	8.4	4, 7, 12, 15, 17
12.9	10, 11		