MATH-332 **Linear Algebra**

Course Syllabus

`http://ticc.mines.edu/` **Summer 2010**

Text	David C. Lay, Linear Algebra and its Applications, 3^{rd} edition, Pearson, Boston, 2006
Course Description	Systems of linear equations, matrices, determinants and eigenvalues. Linear operators. Abstract vector spaces. Applications selected from linear programming, physics, graph theory, and other fields. Prerequisite: MATH 213, 223 or 224.
Sections	A : 3:00pm-4:20pm Location: Green Center 249
Instructor Info	Instructor: Scott Strong Phone: 303.384.2446 Office: Chauvenet Hall 266 Email: math332.summer2010@gmail.com Office Hours: MTWR 12:30pm-1:30pm
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 June 28 Independence Day (No Classes) July 5 Last Day to Drop Without a W July 6 Last Day to Withdraw August 6 Last Day of Class August 19
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.

MATH332 - Summer2010 - Tentative Schedule[1]

Week	Sections	Key Concepts
1	1.1-1.8	Linear Systems of Equations, Vector Equations, Matrix Equations, Existence and Uniqueness of Solutions Sets, Row Echelon Form, Linear Independence, Span, Linear Maps
2	2.1-2.7	Matrix Algebra, Commutativity, Distribution, Inner-Product, Outer-Product, Matrix Product, Matrix Factorizations, Invertible Matrices
3	3.1-3.3	Determinant, Cramer's Theorem, Volumes, Invertible Mappings
4	5.1-5.3, 5.5	Eigenvalues, Spectra, Eigenvectors, Eigenfunction
5	Applications	Numerical Approximation of Solutions to Partial Differential Equations, Leontief Input-Output Models, Systems of Ordinary Differential Equations, Normal Modes of Vibrations, Quantum Computing, Ridged Body Kinematics and Fluid Dynamics
6	4.1-4.6, 4.9	Matrix Spaces, Row Space, Column Space, Null Space, Abstract Vector Spaces, Subspaces, Bases, Dimension, Change of Coordinates
7	6.1-6.6	Inner-Product, Orthogonality, Orthogonal Projection, Gram-Schmidt, Least-Squares, Inner-Product Space
8	7.1, 7.2, 7.4	Eigenbasis, Diagonalization, Quadratic Forms, Singular Value Decomposition, Spectral Decomposition of Symmetric Matrices

[1] A listing of covered sections and recommended problems from the text will be given in the header box of each 'lecture slide' posted on the ticc website.