

ASEN 5227
Fall 2007
Schedule and Assignments

Week	Reading for current week	TUESDAY Discussion/Lecture 9:30-10:45 am	THURSDAY Discussion/Lecture 9:30-1045 am	Make-up Sessions	Assignments
1	Notes AEM Chap 1-2	28 AUG Syllabus and expectations; Part 1: Vector and Tensor Analysis <u>Vector Algebra</u> : Definitions, Elementary Operations, Linear Dependence. Vector Products, Plane Area, Rigid-Body Rotation, Multiple Products	30 AUG Vector Components and Bases, Dual Basis, Index Notation and Summation Convention Orthonormal Basis		Hwk #1
2	Notes AEM Chap 3	4 SEP Graham-Schmidt Orthonormalization, Permutation and Kronecker Delta Symbols, Specification of a Vector, Invariance and Transformation Laws;	6 SEP Argrow Travel		Hwk #2,
3	Notes AEM Chap 4	11 SEP <u>Matrices and Linear Equations</u> : Definitions, Elementary Operations, Linear Equation System, Row Operations	13 SEP Gaussian Elimination, Determinants, Inverse, Cramer's Rule, Eigenvalues and Eigenvectors		Hwk #3
4	Notes AEM Chap 13	18 SEP <u>Vector Calculus and General Coordinates</u> : Fundamental Metric Tensor, Components and Bases	20 SEP Orthogonal Curvilinear Systems, General Coordinate Transformations		Hwk #4
5	Notes	25 SEP Unitary Basis	27 SEP Rotating Frames		Project 1 assigned 27 Sep, Due 9 Oct Hwk #5
6		2 OCT Argrow Local Conference	4 OCT Argrow Local Conference		
7	Notes	9 OCT • Exam 1 distributed in class Project 1 discussion; Directional Derivative, Gradient, Divergence, Laplacian, Curl;	11 OCT • Exam 1 due (0930) Integral Relations, Theorem of Gauss; Reynolds Transport Theorem	Makeup sessions 0800-0915 T,Th	Hwk #6, #7
8	Notes	16 OCT • Project 1 Due • Exam 1 solution Conservation Laws	18 OCT Project 1 solution discussion <u>Dyadics and Tensors</u> , Introduction and Examples		Hwk #8

9	Notes	23 OCT Argrow Travel	25 OCT Dyadic Rules, Transformation Laws, Tensor Gradient Tensor Divergence, Integral Relations, Eigenvalues, Principal Axes		Hwk #9
10	Notes AEM Chap 5	30 OCT Examples	1 NOV Part 2: ODEs Linear ODEs, Initial Value Problems	Makeup session 0800-0915 Tuesday	Hwk #10
		Makeup session Eigenvalues, Principal Axes			
11	AEM Chap 6	6 NOV • Exam 2 distributed in class Initial Value Problems	8 NOV • Exam 2 due (0930) Linear Systems, Vector Equations, Boundary-Value Problems	Makeup session 0800-0915 Tuesday	Hwk #11
		Makeup session: Initial Value Problems			
12	Notes	13 NOV Part 3: Introduction to the Calculus of Variations	15 NOV Exam 2 Solution	Makeup session 0800-0915 Tuesday	
13		20 NOV FALL BREAK, NO CLASS	22 NOV FALL BREAK, NO CLASS		
14	Notes	27 NOV • Project 2 Assigned Exam 2 Solution (cont'd); Extrema in Differential Calculus, Lagrange Multipliers	29 NOV Classical Problems in the Calculus of Variations; Euler Lagrange Equation		Hwk #12
15	Notes	4 DEC Argrow Travel Variational Notation; Euler Equation for Higher Dimensions	6 DEC Argrow Travel Euler Equation for Higher Dimensions		
16	Notes	11 DEC	13 DEC LAST DAY OF CLASS Project 2 Due Exam 3 Distributed		
17		Exam 3 due Monday 18 DEC (12 noon)			

Remote CAETE students please submit exams either by fax (303-485-7875) or email with scan attachment.

Projects are submitted by email.