Sample Syllabus for Introduction to Finite Element Method

 Instructor: Madhukar Vable
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 Office Hours:
 Web. Address: http://www.me.mtu.edu/%7Emavable

 Book(optional): Robert D. Cook "Finite Element Modeling For Stress Analysis", John Wiley & Sons, New York 1995

 Reference Books:
 Warren C. Young "Roark's formulas for stress and strain" Walter D. Pilkey "Peterson's stress concentration factors"

 Grading System: 2 midterm (25% each), Final (25%), Lab. Assignments¹(25%)
 NO MAKE UP EXAM

 D=55-64% D+=65-69% C=70-74% C+=75-79% B=80-84% B+=85-89% A=90%+

 Class
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Class	Section	Topic	Class-Problems	Home Problems
1	B.11 & B1.6	Introduction		
2		Mechanics of Materials Review		
3		Mechanics of Materials Review		
4	N 7.0-7.3	Energy Methods	7.3,7.4	
5	N7.4	Virtual Work	7.7	7.1,7.2,7.5
6	N 8.1	Rayleigh-Ritz		8.2
7	N 8.1	Rayleigh-Ritz	8.6	8.3,8.5
8	N8.2	FEM: Lagrange Polynomials		
9	N8.3,B2.1-2.2	Axial Elements	8.8	8.9, 8.11
10	N8.3-8.4	Axial Elements, Shaft Elements	8.10	8.13, 8.15
11		EXAM 1		
12	N8.5,B2.3-2.5	Symmetric Beam Element	8.23	8.21,8.24
13	N8.5,B2.3-2.5	Symmetric Beam Element		
14	N8.6, B3.1-3.4	FEM 2-D		
15	N8.6, B3.8-3.10	FEM 2-D		
16	B4.1-4.3	Storage and Solution		
17	B4.4 -4.7	Isoparametric elements, Numerical Integration		
18	B4.8-4.12	Convergence, Patch Test		
19	B5.1-5.4,5.6-5.10	Modeling, Error in Analysis, Mesh Refinemen		
20	B6.1, 6.4	Solids of Revolutions		
21	EXAM 2			
22	B7.1-7.2,7.4	Plate and Shell elements		
23	B6.2	3-D Elements		
24	B8.1,8.2	1-D Heat Conduction/ Thremal stresses		
25	B8.3	2-D Steady state heat transfer		
26		REVIEW		
27		FINAL		

Lab Number	Instructional Lab.	Assignment Lab
1.	September 12th	September 21st
2.	September 26th	October 3
3.	October 10th	October 17th
4.	October 24th	November 3rd
5.	November 7th	November 14th
6.	November 28	December 5th

^{1.} Attendance in Lab is 20% of your report grade unless excused by Vable. Lab Assignment reports due in class on Monday after the Lab. assignments. 10% per day deduction for late assignments.