Model Template for Scheme of Course Work

to be submitted by the Faculty of B.Tech/M.Tech/MCA I semester on or before 11.10.2013 to
bhanucvk@gvpce.ac.in and yadavalliraghu@yahoo.com

SCHEME OF COURSE WORK

Course Details:

Course Title	**: Experimental Stress Analysis**			
Course Code	**: 13 ME 2201**	**L P C**		**: 4 0 3**
Program:	**: M.Tech.(Computer Aided Analysis and Design)**			
Specialization:	**: Mechanical Engineering**			
Semester	**: Second Semester**			
Prerequisites	**: Mechanical Measurements**			
Courses to which it is a prerequisite	**:**			

Course Outcomes (Cos):

1	Explain the measurement of stress and strain in structures subjected to static and dynamic loads
2	Use mechanical, pneumatic and electrical strain gauges for strain measurements
3	Explain the applications of plane polarized and elliptically polarized lights
4	Analyze photoelasticity data
5	Calibrate through tension beam and disc models

Program Outcomes (POs):

At the end of the program, the students in CAAD will be able to

PO 1	acquire knowledge in latest computer-aided design and analysis tools
PO 2	create 3D models of real-time components using latest CAD software
PO 3	acquire technical skills to formulate and solve engineering and industrial problems
PO 4	carry out analysis for the design of new products
PO 5	have proficiency to solve problems using modern engineering design tools
PO 6	have capability to work in multidisciplinary streams
PO 7	apply project and finance management skills to organise engineering projects
PO 8	prepare technical reports and present them effectively
PO 9	engage in lifelong learning
PO 10	realize professional and ethical responsibilities
PO 11	conduct surveys, analyse data, plan, design and implement new ideas into action

Course Outcome Versus **Program Outcomes:**

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO-1					S						
CO-2			S								
CO-3								S			
CO-4					S						
CO-5					S						

S - Strongly correlated, *M - Moderately* correlated, *Blank - No correlation*

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Assessment Methods:	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	**Strain Measurement**: Ideal strain gauge,Mechanical,optical,acoustical gauges	CO-2	Explain the working principle of mechanical strain gauge with a neat sketch	Lecture Demonstration	Assignment (Week 2 - 4)
2	Pneumatic,dielectric and Electrical strain gauges	CO-2	What is the working principle of Pneumatic strain gauge?	Lecture / Discussion	Mid-Test 1 (Week 9)
3	Differential transformer and Piezo electric transducers	CO-1	Explain the LVDT with a neat sketch.	Lecture	Seminar (Week 2 - 4)
4	**Electrical wire resistance strain gauges:** Bonded type gauges ,bonding agents, foil gauges	CO-3	What are the applications of bonded type gauges?	Lecture	
5	Gauge materials and weldable gauges	CO-3	Explain about the Weldable gauges	Lecture Demonstration	
6	Strain gauges-adhesives and fixing of gauges	CO-1	Explain about the different types of adhesives	Lecture	
7	temperature effects in bonded gauges	C0-1	What are the temperature effects in bonded gauges?	Lecture	
8	Gauge factor and gauge sensitivity	CO-2	How do you determine the gauge sensitivity for the different materials?	Lecture	
9	**Mid-Test 1**	CO-1,CO-2&CO-3			
10	Measurement of stress and stress gauge	CO-2	Explain about the measurement of stress gauge	Lecture	Mid-Test 2 (Week 18)
11	**Measuring circuits and strain gauge rosettes**: Potentiometer circuit	CO-3	Derive the equation for the Potentiometer circuit	Lecture and Problem solving	Case Study (Week 10 - 14)
12	Wheatstone bridge, Circuit sensitivity and output	CO-4	What are the applications of Wheatstone bridge circuit?	Problem Solving	
13	Temperature compensation and signal addition	CO-4	How the temperature compensation is made in strain gauge circuits?	Lecture	
14	Rectangular, delta and Tee delta rosette	CO-4	How do you calculate the strains in various rosettes?	Lecture and Problem solving	
15	Applications of strain gauges in practical problems	CO-3	What are the applications of strain gauges in practical applications?	Lecture	Seminar (Week 15)
16	**Vibration Measurement:** Introduction, transducers, Vibration pickups	CO-5	Explain about the transducers and vibration pickups	Lecture	
17	Frequency measuring instruments, vibration exciters, signal analysis	CO-5	Explain about the frequency measuring instruments	Lecture	
18	**Mid-Test 2**				
19/20	**END EXAM**				