AME341bL: Mechoptronics Laboratory II

v1 1/10/13

Recommended texts: ***Introduction to Mechatronics and Measurement Systems***, Alciatore & Histand (2011) McGraw-Hill.
Theory and Design for Mechanical Measurements, Figliola & Beasley (2010) Wiley.
The Art of Electronics, Horowitz & Hill (1989) Cambridge University Press.

Lecture: MWF 8-8:50 **or** 9-9:50 **ZHS 159** Lab: M, T, W **or** Th 2-4:50 **BHE 301**

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Wk	Date	Lecture	Lab	Assn.	%
1	M 1/14	Introduction	**No Lab.**		
	W 1/16	2nd Order Systems I			
	F 1/18	**Strain Gauges**			
2	**M 1/21**	**MLK Day**	**No Lab.**		
	W 1/23	Wheatstone Bridge			
3	M 1/28	2nd Order Systems II	E1: Strain gauges/Vibrating Beams (SS1)		
	W 1/30	Thermocouples			
4	M 2/4	Convective Heat Transfer	E2: Thermocouples/Heat Transfer (R1)	**SS1**	**12**
	W 2/6	Turbulence, Jets and Plumes			
5	M 2/11	Dynamic Pressure	E3: Turbulent Jets **I** (DPL)	**R1**	**12**
	W 2/13	Quiz Preview/Proposal Info.			
6	**M 2/18**	**President's Day**	**No Lab.**	**DPL**	**8**
	W 2/20	Lab View I	MiniTalks from TJ1		
7	M 2/25	Lab View II	E4: LabVIEW I – Custom Thermo (E4b)	**TJP**	**7**
	W 2/27	Terror Quiz		**TQ**	**8**
	F 3/1	**TQ Post Mortem**			
8	M 3/4	Electric Motors	E5: LabVIEW II – Motor Control	**E4b**	**2**
	W 3/6	More on Turbulent Jets			
9	M 3/11	No lecture – plan E6 in lab	E6: Turbulent Jets **II** (T1)		
	W 3/13	Talks for 341/TJ2			
10	**M 3/18**	**SPRING BREAK**	**No Lab.**		
	W 3/20				
11	M 3/25	Optics1 – basics	SE1: Optical Strain (OS)		
	W 3/27	Optics2 – digital optics			
12	M 4/1	Not sure yet.	**TALKS from E6:TJ2**	**T1**	**16**
	W 4/3	Compressible Flows		**(SE1)**	
13	M 4/8	Shock Tube Measurement	OS +		
	W 4/10	Engineering Aerodynamics	SE2: Shock Tube (ST)		
14	M 4/15	Lift and Drag of Airfoils	ST +	**(SE1,2)**	**16**
	W 4/17	Example Spreadsheets	SE3: Wind Tunnel (WT)		
15	M 4/22	~~	WT	**(SE2,3)**	
	W 4/24	Last Words			
16	M 4/29	**NO LECTURES**	Final Spreadsheet Presentations (SS2)	**(SE3)**	**16**
	W 5/1				

- 3% of the total grade will be determined by a Lab Performance measure compiled by staff over the whole semester. It includes all aspects of engagement in labs, discussion board and office hours.
- The last three experiments, (OS, ST, WT) are run for two weeks each. There will be sign-up sheets for each. Each student must complete at least 2 of the 3 Special Experiments.
- A full written report (16% of course grade) is required for one of the experiments and is due one week after the experiment is performed.
- A spreadsheet presentation (also 16%) is required for the other experiment and is given in a 10 minute timeslot on your regular lab day during the last week of classes.