AME341bL: Mechoptronics Laboratory II

v1 12/06/2022

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

Lecture: MW 12-1:50 pm THH 301 Lab: M, T, W **or** Th 2-4:50 **BHE 301**

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Week	Date		Lecture	Lab	Assn. Due	%
1	M 1/9	(1)	Introduction	**E9**: LabView I - Motor Control (Moving the Dials)		
	W 1/11	(2)	Wheatstone Bridge & Strain Gauges			
2	**M 1/16**		**MLK Day**	**No Lab**		
	W 1/18	(3)	2nd Order Systems			
3	M 1/23	(4)	LabView I - Vibrating Beam Prep	**E10:** Strain gauges/Vibrating Beams		
	W 1/25	(5)	LabView II - Sampling			
4	M 1/30	(6)	Turbulence, Jets and Plumes; LabView III	**E11**: LabView II - Linear Motion		
	W 2/1	(7)	Safety; Dynamic Pressure & Measurement			
5	M 2/6	(8)	Minitalks?	**E12:** LabView III - Automation	**A10** *Report*	**12**
	W 2/8		**NO Lecture !!!**		**A11** LabView	**2**
6	M 2/13	(9)	Thermocouples & A10,11 Recap	**E13:** Turbulent Jets		
	W 2/15	(10)	Ardunio			
7	**M 2/20**		**President's Day**	**No Lab**… but MiniTalks	**A13** *MiniTalk*	**12**
	W 2/22	(11)	Convective Heat Transfer			
8	M 2/27	(12)	A13 Recap; SE & Junior Project Proposal Info	**E14:** Themocouples	**A13.5** *Arduino @ Home*	**4**
	W 3/1	(13)	Optics I - Light and Lenses			
9	M 3/6	(14)	Optics II - Digitization and Correlation	**SE1:** Digital Image Correlation	**A14** *Spreadsheet*	**10**
	W 3/8	(15)	Wind Tunnel I - Engineering Aerodynamics			
10	**M 3/13**		**SPRING BREAK**	**No Lab**		
	W 3/15					
11	M 3/20	(16)	Wind Tunnel II - Lift and Drag of Airfoils	**SE1:** Digital Image Correlation **SE2:** Wind Tunnel	JP-P Proposal	**4**
	W 3/22	(17)	SMA I			
12	M 3/27	(18)	SMA II	**SE2:** Wind Tunnel **SE3:** SMAs		
	W 3/29	(19)	SE Spreadsheet and Presentation Details		**SE1** *Report*	**12**
13	M 4/3	(20)	Something Fascinating I	**SE3:** SMAs	**SE2** *Report* Equipment List	**1**
	W 4/5	(21)	Something Fascinating II			
14	M 4/10	(22)	No Lecture - Planning for E15 in Lab	**No Lab** … but SE: 1-on-1 Spreadsheet Presentations	**SE3** *Report*	**12**
	W 4/12	(23)	AME 441			
15	M 4/17	(24)	JP Presentation Details - How to Present?	**E15:** Junior Project		
	W 4/19	(25)	AME 441: Top Groups!			
16	M 4/24	(26)	Final Exam Review	**No Lab** … but Junior Project Presentations	**A15** *Presentations*	**12**
	W 4/26	(27)	Grad School?		**441-bb** *Piazza Post*	**1**
17	M 5/1		**Study Days**			
18	M 5/5		**Final Exam: 11am - 1pm**		**Final Exam**	**15**

- 3% of the total grade will be determined by a Performance measure compiled by staff over the whole semester. It includes all aspects of engagement in lectures, labs, the discussion board and office hours.
- The last three Special Experiments (SE1, SE2 and SE3) are run for two weeks each. Each student must complete 2 of the 3 Special Experiments.
- A full written report, worth 12% of the course grade, is required for one of the Special Experiments.
- A 1-on-1 presentation/demo of data analysis, worth 12% of the course grade, is required for a second SE It is given during a 10- minute timeslot on your regular lab day during week 14.