

AME341bL: Mechoptronics Laboratory II

v4 1/14/2021

Textbooks:

- (required) **LabView** (Download and Install Instructions will be posted on Piazza)
- (optional) *Introduction to Mechatronics and Measurement Systems*, Alciatore & Hestand (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: MWF 8-8:50 **ZOOM**

Lab: M, T, W or Th 2-4:50 **Virtual** (ZOOM + Anydesk)

Instructors:

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Week	Date	Lecture	Lab	Assn. Due	%
1			No Lab		
	F 1/15	(1) Introduction			
2	M 1/18	MLK Day	No Lab		
	W 1/20	(2) LabView I - Introduction & A8 Assignment			
	F 1/22	(3) LabView II - Stepper Motor Control			
3	M 1/25	(4) LabView III - Stepper Motor Control 2	E9: LabView I Basic Motor Control	A8 LabView @ Home 1 Due 1/25 for ALL	4
	W 1/27	(5) LabView IV - Sampling, Global Variables			
	F 1/29	(6) A8 Recap			
4	M 2/1	(7) LabView V - Feedback	E10: LabView II Incorporating Feedback	A9 LabView @ Home 2	4
	W 2/3	(8) 2nd Order Systems I			
	F 2/5	(9) A9 Recap			
5	M 2/8	(10) Strain Gauges	E11: LabView III Final Stepper Motor Demonstration	A10 LabView Check	4
	W 2/10	(11) Wheatstone Bridge			
	F 2/12	(12) Second Order Systems II			
6	M 2/15	President's Day	No Lab		
	W 2/17	(13) LabView VI - Vibrating Beam Prep			
	F 2/19	(14) Dynamic Pressure & Measurement			
7	M 2/22	(15) Jets, Plumes & Self Similarity	E12: Vibrating Beams		
	W 2/24	(16) Thermocouples			
	F 2/26	(17) Arduino I			
8	M 3/1	(18) Arduino II	No Lab		
	W 3/3	(19) Convective Heat Transfer I			
	M 3/8	(20) Convective Heat Transfer II			
9	W 3/10	(21) SE & Junior Proposal Info	E13: Thermocouples & Heat Transfer	A12 Report	12
	F 3/12	Wellness Day			
	M 3/15	(22) A12 Recap & Exam Review Pt. 1			
10	W 3/17	(23) Wind Tunnel 1 - Engineering Aerodynamics	No Lab ... but MiniTalks	A13 Minitalks	10
	F 3/19	(24) A13 Recap & Exam Review Pt. 2			
	M 3/22	(25) Wind Tunnel 2 - Lift and Drag of Airfoils			
11	W 3/24	Midterm Exam	SE1: Wind Tunnel	Exam	15
	F 3/26	(26) Optics 1 - Light and Lenses			
	M 3/29	(27) Optics 2 - Digitization and Correlation			
12	W 3/31	(28) SMA 1	SE1: Wind Tunnel SE2: Digital Image Correlation	SE1 Report	12
	F 4/2	(29) SMA 2			
	M 4/5	(30) SMA 3			
13	W 4/7	Wellness Day	SE2: Digital Image Correlation SE3: SMAs	SE1, SE2 Report JP: Proposal	8
	F 4/9	(31) SE Presentation Details & Exam Recap			
	M 4/12	(32) Something Fascinating I			
14	W 4/14	(33) Something Fascinating II	SE3: SMAs	SE2, SE3 Report	
	M 4/19	(34) AME 441 - I			
15	W 4/21	(35) AME 441 - II	No Lab ... but SE: 1-on-1 Spreadsheet Presentations	SE3 Report SE Presentations	12
	M 4/26	(36) AME 441 - Top Groups!			
16	W 4/28	(37) Grad School?	No Lab ... but Junior Proposal Presentations	A16 Presentations 441-PP Piazza Post	2
	F 4/30	Wellness Day			

- 5% 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 offered for two weeks each. You may pick what day you "conduct" the experiment. Each student must complete at least 2 of the 3 Special Experiments.
- SE Report, a full written report, worth 12% of the course grade, is required for one of the Special Experiments. It is due one week after the experiment is "conducted."
- SE Presentations, a 1-on-1 presentation/demo of data analysis, worth 12% of the course grade, is required for the other Special Experiment. It is given in a 10- minute timeslot on your regular lab day during week 15.