

# AME341bL: Mechoptronics Laboratory II

v1 10/20/2023

**Textbooks:**

(optional) *Introduction to Mechatronics and Measurement Systems* , Alciatore & Hstand (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

**Instructors:**

Dr. A. Potnuru OHE 500G potnuru@usc.edu  
 Dr. E. Singer RRB 226 eksinger@usc.edu

Week	Date	Lecture	Lab	Assn. Due	%
1	M 1/8	(1) Introduction	E9: LabView I - Motor Control (Moving the Dials)		
	W 1/10	(2) Wheatstone Bridge & Strain Gauges			
2	M 1/15	MLK Day	No Lab		
	W 1/17	(3) 2nd Order Systems			
3	M 1/22	(4) LabView I - Vibrating Beam Prep	E10: Strain gauges/Vibrating Beams		
	W 1/24	(5) LabView II - Sampling			
4	M 1/29	(6) Turbulence, Jets and Plumes; LabView III	E11: LabView II - Linear Motion		
	W 1/31	(7) Safety; Dynamic Pressure & Measurement			
5	M 2/5	(8) Minitalks?	E12: LabView III - Automation	A10 Report	12
	W 2/7	NO Lecture !!!		A11 LabView	2
6	M 2/12	(9) Thermocouples & A10,11 Recap	E13: Turbulent Jets		
	W 2/14	(10) Arduino			
7	M 2/19	President's Day	No Lab... but MiniTalks	A13 MiniTalk	12
	W 2/21	(11) Convective Heat Transfer			
8	M 2/26	(12) A13 Recap; SE & Junior Project Proposal Info	E14: Themocouples	A13.5 Arduino @ Home	4
	W 2/28	(13) Optics I - Light and Lenses			
9	M 3/4	(14) Optics II - Digitization and Correlation	SE1: Digital Image Correlation	A14 Spreadsheet	10
	W 3/6	(15) SMA 1			
10	M 3/11	SPRING BREAK		No Lab	
	W 3/13				
11	M 3/18	(16) SMA 2	SE1: Digital Image Correlation SE2: SMAs	JP-P Proposal	4
	W 3/20	(17) Wind Tunnel I - Engineering Aerodynamics			
12	M 3/25	(18) Wind Tunnel II - Lift and Drag of Airfoils	SE2: SMAs SE3: Wind Tunnel	SE1 Report	12
	W 3/27	(19) SE Spreadsheet and Presentation Details			
13	M 4/1	(20) Something Fascinating I	SE3: Wind Tunnel	SE2 Report Equipment List	1
	W 4/3	(21) Something Fascinating II			
14	M 4/8	(22) No Lecture - Planning for E15 in Lab	No Lab ... but SE: 1-on-1 Spreadsheet Presentations	SE3 Report	12
	W 4/10	(23) AME 441			
15	M 4/15	(24) JP Presentation Details - How to Present?	E15: Junior Project		
	W 4/17	(25) AME 441: Top Groups!			
16	M 4/22	(26) Final Exam Review	No Lab ... but Junior Project Presentations	A15 Presentations	12
	W 4/24	(27) Grad School?		441-bb Piazza Post	1
17	M 4/29	Study Days			
18	F 5/3	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.