BE 2350 Experimental Methods for Engineers
Spring 2019

Credit hours: 3 (

Students interested in pursuing the LSU Distinguished Communicators certification may use this C-I course for credit. For more information about this student recognition program, visit _____.

Academic Integrity and Academic Misconduct

Students are expected to comply with the Code of Student Conduct at all times throughout this course. For your information, the Code of Student Conduct can be found at:

_____

Homework Problem Format

Homework should be completed on 1-sided engineering paper or white printer paper. It can be handwritten or completed on the computer. Hand-written homework submissions will need to be scanned to be uploaded to Moodle. Therefore, please use dark #2 pencil or ink scribing to complete your work. Work may be scanned in room 1269 PFT, Chevron Center.

Each problem solution must include:

Paraphrase the question. What is the thing you are trying to solve? However, don't waste your time writing the question word-for-word.
List your known information (constants, givens) including the units.
Write down the equations you plan to use, include the name of the equation if there is one.
Although, good for error checking, I do not require step-by-step algebra in which you use to solve the problem(s).
Highlight your final answer (e.g. a box around it) and don't forget the units. **I will not accept a number without its units and you must provide the number in logical significant digits.** (ex: ~~500.25 paces~~ is 501 paces, ~~35,000.276~~ is 35,000 Reynolds Number, ~~$5.315~~ is $5.32)
Provide 1-3 sentences that effectively explain how your solution to the problem makes sense.

Executive Summary Format / Final Project Format

Laboratory sessions will be summarized using a 2-page executive summary. Proper formatting will be explained in laboratory session 1. Expected formatting examples and tips are also available on the course Moodle page.

The final laboratory sessions will be an opportunity to design an experiment, which will be communicated in a report and presentation. Expected formatting examples and tips are available on the course Moodle page.

Career Development

You will be assigned to apply for a summer job/internship/research opportunity specific to your career goals and you will have to write and give an elevator pitch to a fellow classmate. These assignments are incorporated within the class to better prepare you for obtaining acceptance to the next step, i.e. industry, professional or graduate school.

BE 2350 Lecture and Lab Tentative Schedule for Spring 2019 (subject to change)

Date	Topic	Reading Assn.
1/9	Lecture 1: Introduction to the course, Executive Summaries	
LAB	**No lab**	
1/14	Lecture 2: Measurement Systems and Units, Instrument Types	Chap 1 – 2.2
1/16	Lecture 3: Static and Dynamic Characteristics of Instruments	Chap 2.2 – 2.5
LAB	**Lab 1: Safety and Introduction to Lab, Multimeters, Soldering**	Exec Summary
1/17	**Final date for dropping classes without receiving a grade of "W," 4:30 pm deadline**	
1/18	**Final date for adding courses and making section changes, 4:30 pm deadline**	
1/21	MLK day – no class	
1/23	Lecture 4: Measurement Uncertainty	Chap 3
LAB	**No lab**	
1/28	Lecture 5: Measurement Uncertainty	Ch. 3, handout
1/30	Lecture 6: Calibration and Electrical Testing Instruments	Chaps 4, 7
LAB	**Lab 2: Introduction to the Arduino microcontroller – Part 1**	Exec Summary
2/4	Lecture 7: Voltage Dividers, Variable Conversion Elements	Chap 9.1-9.3
2/6	Lecture 8: VCEs, Oscilloscopes	Chap 9.4-9.9
LAB	**Lab 3: Introduction to the Arduino microcontroller – Part 2**	Exec Summary
2/11	Lecture 9: Reliability and Safety Systems	Chap 12
2/13	Lecture 10: Sensor Technologies	Chap 13
LAB	**Lab 4: Basic Electronic Circuits (voltage dividers, 555 timer)**	Exec Summary
2/18	Lecture 11: Temperature Measurement: Part 1	Ch. 14.1
2/20	Lecture 12: Temperature Measurement: Part 2	Ch. 14.2-14.15
LAB	**Lab 5: Programming/Coding**	Exec Summary
2/25	Lecture 13: Pressure Measurement	Ch. 15
2/27	Lecture 14: Flow Measurement	Chap 16
LAB	**Lab 6: Data Analysis / Hypothesis testing, lab**	

3/18	Lecture 15: Flow Measurement, Level	Chap 16, 17
3/20	Lecture 16: Mass, Force, and Torque Measurement	Chap 18
LAB	**Lab 7: DAQ and Logging – Pace loggers**	Exec Summary
3/22	**Final date for dropping courses, 4:30 pm deadline**	
3/25	Lecture 17: Translation Motion	Chap 19
3/27	Lecture 18: Vibration and Shock, Rotational Motion	Chap 19, 20
LAB	**Lab 8: LabVIEW DAQ Examples**	Exec Summary
4/1	Lecture 19: Other Sensors (ISE, biosensors)	Reading
4/3	Lecture 20: Signal Processing with Amplifiers and Filters	Chap 6, Handout
LAB	**Lab 9: Experiment Design Project**	Final Report
4/8	Lecture 21: PC and Device Communications	Chap 11, Handout
4/10	Lecture 22: PC and Device Communications	Chap 11, Handout
LAB	**Lab 10: Experiment Design Project**	
4/15	Spring Break – No Class	
4/17	Spring Break – No Class	
LAB	**No lab**	
4/22	Lecture 23: Guest Speaker	
4/24	Final Review	
LAB	**Final Project Presentations and Report due onto Moodle**	

FINAL EXAM: Thursday May 2, 2019 – 7:30 a.m. to 9:30 a.m.