

Course	ECE 20700 – Electronic Measurement Techniques
Type of Course	Required for the CmpE and EE programs
Catalog Description	Experimental exercises in use of laboratory instruments. Voltage, current, impedance, frequency and waveform measurements. Frequency and transient response. Elements of circuit modeling and design.
Credits	1
Contact Hours	3
Prerequisite Courses	ECE 20100
Prerequisites by Topics	NA
Textbook	First Designs in Electrical Engineering, Dimitrios Peroulis, Nithin Raghunathan, Barrett Robinson, Matthew Swabey, Kendall Hunt, 2014, ISBN No. 9780757593864
Course Objectives	This course provides a hands-on experience in electronics laboratory instruments and measurements.
Course Outcomes	A student who successfully fulfills the course requirements will have demonstrated: <ol style="list-style-type: none">1. An ability to competently operate basic laboratory equipment (6).2. An ability to make voltage, current, impedance, transient, and frequency response measurements (6).3. An ability to layout, wire and troubleshoot electronic circuits (6).4. An ability to design operational amplifier circuits from a set of specifications (2).5. An ability to keep a laboratory notebook and prepare a formal laboratory report (3).6. An ability to do electronic soldering (6).7. An ability for PCB layout design. (6)

Laboratory Topics	<ol style="list-style-type: none"> 1. Experiment Title or Activity 2. Course overview; Intro to Oscilloscope, Ohmmeter, Voltmeter 3. Simple Op-Amp Circuit; Oscilloscope I 4. Op-Amp Equations; Current Measurement 5. Follower Circuit 6. Summing Amplifier 7. Integrator 8. Linear Scale Ohmmeter 9. Scope II: triggering, x-y mode 10. Lab practical exam 11. Step response and time constant measurement 12. AC bridge circuit 13. Frequency response measurement 14. Filter design 15. Soldering Technique 16. PCB Design 17. Lab practical exam
Computer Usage	Low
Laboratory Experience	High
Design Experience	Medium
Coordinator	Guoping Wang Ph.D.
Date	08/20/2024