



# **SYLLABUS ECE 2300 Electrical Circuits & Electronic Devices Laboratory**

## **Autumn 2020**

### **Catalog Description:**

Accompanies and complements 2300 by demonstrating the physical principles discussed there; use of electrical instruments such as oscilloscopes, function generators and digital multi-meters.

# SYLLABUS ECE 2300 Electrical Circuits & Electronic Devices Laboratory

## Autumn 2020

- **Lab Supervisor:**

Dr. Gregg Chapman

[chapman.415@osu.edu](mailto:chapman.415@osu.edu)

Caldwell Lab 249 (close to the lab)

Office hours: By appointment

- **Lab Teaching Assistant:**

Indranil Nayak

[nayak.77@osu.edu](mailto:nayak.77@osu.edu)

- **Office hours** (for lab related questions): You must contact the Teaching Assistant to make special arrangements to meet for office hours due to the COVID-19 Pandemic.
- **Lab Monitors:** To Be Determined. Three per section.

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- **Material:**

- Lab instructions, manuals and screencasts are available at <https://u.osu.edu/ece2300labs/>
- **NOTE: All students and staff must watch the Laboratory PPE Training Video prior to coming to their first live lab.**
- Each student will be provided a lab kit, safety glasses, and a breadboard. These are yours to keep, but must be brought to each live laboratory.
- Each laboratory is accompanied by video presentations (at [u.osu.edu/ece2300labs](https://u.osu.edu/ece2300labs/)).

- **Lab Groups: Due to the COVID-19 Pandemic, all students will work separately.**

- **Grading:**

- Lab Results – 70% of Lab grade, completed during Lab
- Lab Quizzes – 30% of Lab grade, performed electronically, prior to Lab
- The Lab grade is 20% of your overall course grade
- There are no lab reports for ECE 2300
- There is no separate final examination for the lab.

Group #: \_\_\_\_\_

# Results

## Laboratory 1

Name/# : \_\_\_\_\_

Name/# : \_\_\_\_\_

Name/# : \_\_\_\_\_

Circuit	Parameter	Calculated Value	Measured Value
Series Resistance	Total Resistance		
Parallel Resistance	Total Resistance		
Current Divider	Input Current		
	Current in R3		
	Current in R4		
Voltage Divider	Output Voltage		
Resistor Network	Total Resistance		
	Output Voltage		
	Voltage at Node 1		
	Voltage at Node 2		
	Current in R7		
	Current in R8		
	Current in R9		
	Current in R10		
	Current in R11		
	Current in R12		
	Voltage Across R7		
	Voltage Across R8		
	Voltage Across R9		
	Voltage Across R10		
Voltage Across R11			
Voltage Across R12			

Clean-up Checkpoint:

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- **Quizzes:** You will be required to take a quiz which covers the material in the two videos for each lab, **prior to conducting the laboratory**. *There is no quiz for the Pre-lab.* No extensions will be given to take quizzes.

**NOTE:** Students are required to take a quiz which covers the material on the two videos for each lab. ***The quizzes are available on Canvas/Carmen from one week prior to each laboratory and until the end of the last lab section for a specific lab. You should complete the lab quiz PRIOR to coming to your lab session.*** If you miss a lab, you are still responsible to take the quiz during the allotted time period.

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- **Lab Topics:**

- Lab 0 (Pre-Lab) – Introduction to the Lab Equipment
- Lab 1 – Resistor Networks
- Lab 2 – Passive Filters Transient Response
- Lab 3 – Passive Filters – Frequency Response
- Lab 4 – Operational Amplifiers 1 - Gain Stages
- Lab 5 – Operational Amplifiers 2 - Active Filters
- Lab 6 – Diodes

- **Start Date:** Due to the shortened semester, labs will start the week of **August 31st.**

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- **Dropped lab grade policy:**

- To accommodate attendance at conferences, career fairs, job interviews, and presentations, students the lowest lab quiz and lowest lab result will be dropped.
- The dropped lab grades are automatically selected, and include the lowest quiz score and the lowest result score. These may occur in separate labs.

- **Lab make-up policy:**

Due to the COVID-19 Pandemic, there is no room or time to perform make-up labs this semester. Missed labs cannot be made up.

- **Group Participation:**

Due to the COVID-19 Pandemic, there are no lab partners this semester. Please feel free to work with other students during the live lab, as long as you adhere to the following rules.



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- **SPECIAL COVID-19 Pandemic Policies (For your protection):**
  - 1) Each course will have 6 live, in person, laboratories located in Caldwell 237.
  - 2) Students will attend labs every other (alternating) week.
  - 3) No more than 40 students will be in the lab during one session.
  - 4) During live labs, all students and staff must maintain social distancing of 6 feet at all times.
  - 5) Each student will have their own lab bench.
  - 6) There are no lab partners this semester.
  - 7) Each student and staff member must wear a face mask.
  - 8) Students and staff members must wear disposable gloves at all times in the laboratory.  
This is because we can only clean equipment once a day.
  - 9) Students will be provided with their own lab kit.
  - 10) Laboratory bench surfaces and equipment are disinfected once each day, after the final lab session with a 99% isopropyl alcohol mist. This is performed by the lab staff.
  - 11) All students must watch the PPE Training Video available on the lab website before attending their first lab.

# Laboratory Kits

- Laboratory kits will be provided to each student free of charge during the first lab.



Bill of Materials - ECE 2300 Laboratory Kits						
	Quantity	Item	Part	Description	Mfg#	Mfg
1	2	Capacitor	1000pF	50V, X7R, 10%	SR155C102KAR	AVX
2	3	Capacitor	0.01uF	50V, X7R, 5%	SR215C103JAR	AVX
3	3	Capacitor	0.1uF	50V, X7R, 5%	SR215C104JAR	AVX
4	3	Capacitor	1.0uF	35V, 10%	TAP105K035SCS	AVX
5	2	Diode	1N4148-G	Small Signal Diode, 75V, 150mA	1N4148-G	Comchip Tech
6	3	Diode	5.1V	Zener, 500mW	1N5231BTR	Fairchild
7	5	Diode	1N4001-T	Rectifier, 50V, 1A	1N4001-T	Diodes Inc.
8	2	LED	LED - GRN	568nm, 2.2V	WP3A8GD	Kingbright
9	1	Inductor	1 mH	Inductor, +/-5%, 500 mA, 1.4 Ohms	TSL1112RA-102JR50-PF	TDK
10	2	Transistor	2N7000TA	N channel MOSFET, 60V, 200mA	2N7000TA	Fairchild
11	2	Transistor	2N5087G	PNP Transistor, Low Noise	2N5087G	ON Semi
12	2	Transistor	2N5088G	NPN Transistor, Low Noise	2N5088G	ON Semi
13	2	Transistor	ZVP2106A	P channel MOSFET, 60V, 280 mA	ZVP2106A	Diodes/Zetex
14	3	Resistor	150	150, 1%	MFR-25FBF-150R	Yageo
15	3	Resistor	316 Ohm	316, 1%	MFR-25FBF-316R	Yageo
16	2	Resistor	1.00K	1.00K, 1%	MFR-25FBF-1K00	Yageo
17	3	Resistor	1.62K	1.60K, 1%	MFR-25FBF-1K62	Yageo
18	2	Resistor	2.00K	2.00K, 1%	MFR-25FBF-2K00	Yageo
19	4	Resistor	3.32K	3.32K, 1%	MFR-25FBF-3K32	Yageo
20	3	Resistor	4.99K	4.99K, 1%	MFR-25FBF-4K99	Yageo
21	2	Resistor	7.50K	7.50K, 1%	MFR-25FBF-7K50	Yageo
22	2	Resistor	10.0K	10.0K, 1%	MFR-25FBF-10K0	Yageo
23	2	Resistor	16.2K	16.0K, 1%	MFR-25FBF-16K2	Yageo
24	3	Resistor	20.0K	20.0K, 1%	MFR-25FBF-20K0	Yageo
25	2	Resistor	100K	100K, 1%	MFR-25FBF-100K	Yageo
26	2	IC	LME49710NA	Op-Amp	LME49710NA	National Semi

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You must be enrolled in one of the following section number in addition to Lecture. All sections have been limited to 40 students.

ECE 2300								
Carmen #	Lab Group	Time	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6
9615	Group A Monday	5:45-8:45	31-Aug	21-Sep	5-Oct	19-Oct	2-Nov	16-Nov
36296	Group B Monday	5:45-8:45	14-Sep	28-Sep	12-Oct	26-Oct	9-Nov	23-Nov
10363	Group A Thursday	11:15-2:15	3-Sep	17-Sep	1-Oct	15-Oct	29-Oct	12-Nov
36297	Group B Thursday	11:15-2:15	10-Sep	24-Sep	8-Oct	22-Oct	5-Nov	19-Nov
9616	Group A Thursday	5:45-8:45	3-Sep	17-Sep	1-Oct	15-Oct	29-Oct	12-Nov
36298	Group B Thursday	5:45-8:45	10-Sep	24-Sep	8-Oct	22-Oct	5-Nov	19-Nov

**Please NOTE** that the semester has been shortened considerably, your labs begin as early as **AUGUST 31<sup>st</sup>** and end on or before **NOVEMBER 23<sup>rd</sup>**.

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- **Other Lab Policies**

- No food or liquids are **EVER** allowed at the lab bench.  
Due to the COVID-19 Pandemic, the student lounge is closed.
- There will be one trash can for the disposal of gloves when you exit the lab.

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- **Disabilities Statement**

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss specific needs. Please contact the OSU Office for Disability

Services for assistance in verifying the need for accommodations and developing accommodation strategies.

- **Student Conduct**

Students are expected to abide by the provisions in the Code of Student Conduct. The University's [Code of Student Conduct](#) and [Sexual Harassment Policy](#) are available on the OSU Web page.

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- **Academic Misconduct Statement**

Any student found to have engaged in academic misconduct, as set forth in the Code of Student Conduct Section 3335-23-04, Prohibited Conduct, will be subject to disciplinary action by the university.

Academic misconduct is any activity that tends to compromise the academic integrity of the university, or subvert the educational process. Using or uploading ECE 2300 course material on non-OSU websites is considered academic misconduct and will be prosecuted as such.

**NEW:** Using or uploading ECE 2300 course material on non-OSU websites is considered academic misconduct and will be prosecuted as such.

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**NOTE 1:** Any interpretation of the syllabus in part or in its entirety that conflicts with the original intention of the instructor is not valid and will not be taken into consideration.

**NOTE 2:** Any petition to change the policy will not be considered. If the situation is explicitly discussed in this syllabus, a response to emails requesting an exception will refer you to the syllabus.

**NOTE 3:** In the event that another document contradicts the syllabus, the syllabus will take precedent.