

Physics 0525 Analog and Digital Electronics

Spring 2019

Lectures: Tuesday 11:00 AM – 12:50 PM, 106 Allen

Lab: 2:00- 4:55, 324 OEH

Textbook: D.W. Snoke, *Electronics: A Physical Approach*, (Pearson, 2015).

Note: **Errata** file is available on Courseweb.

Instructor: Dr. David Snoke

office: G-11 Allen; phone: 624-9007; email: snoke@pitt.edu

office hours: almost any time between 10:00 AM to 6:00 PM weekdays. Drop by for short questions, or email for an appointment.

TA: Shouvik Mukherjee

office: G-12 Allen; phone: 624-7861, email: shouvik.mukherjee@pitt.edu

office hours: Wednesdays 2:00-4:00 PM

For help with lab instruments and supplies, and to report equipment problems:

Dr. Istvan Danko

office: 329 OEH; phone: 4-9030; email: izdanko@pitt.edu

Schedule:

<u>Date</u>	<u>Lab</u>	<u>Reading</u>
January	8 Lab 1. DC Current and Voltage; Voltage Dividers	1.1-1.6
	15 Lab 2. AC Measurements; Capacitors	2.1-2.4, 2.9
	22 Lab 3. RLC Circuits	2.5, 2.6, 2.8, 2.10
	29 Lab 4. Cables and Impedance Matching	3.1-3.3, 3.5
February	5 Lab 5. Diode Circuits	4.1-4.4, 4.5.1
	12 Lab 6. Bipolar transistors	5.1, 5.2, 5.3.1-5.3.3
	19 Lab 7. Field-effect transistors	5.4.1, 5.4.3, 5.4.4
	26 Lab 8. Op-Amps	6.1-6.4
March	6 MIDTERM in class, first hour, on chapters 1-5	
	Lab 9. Pulses and Timing	6.5.1, 7.1-7.5, 7.6.1
	13 SPRING BREAK	
	19 Lab 10. A/D Conversion, Registers	7.7, 7.8, 8.1-8.3
	26 Lab 11. Introduction to Arduino	8.4, 8.10, <i>Sparkfun</i> Guide
April	2 Lab 12. Arduino II; Parallel and Serial Communication	8.8, 8.9
	9 Lab 13. Arduino III; PID Control	6.7, 7.10, 7.11, 7.12, 7.13
	16 Lab 14. Arduino Special Project. Spectral analysis	2.7, 3.4, 3.10, 3.11

Grade distribution:

Labs: 50%

Homework: 20%

Midterm exam: 12%

Final exam: 18%

Lab Notes and Lab Reports:

Your lab grade is based both on a participation grade (based on observations by the TA and the instructor) and your work written on the handouts (available on Courseweb). There is no need for a formal “lab report”, but for some labs you may want to complete calculations at home. Lab reports are due in lab one week later.

Most labs have assignments that you must build a certain circuit; you must have your work for each part verified and initialed by the instructor or the TA before you leave the lab. If you have not finished, you can schedule another time to make up the lab, in which case your work must also be verified. The TA or professor may also approve dropping some parts of the lab.

Missing labs: Students can be excused from missing a lab only for a university-recognized, documented reason (e.g., a written doctor’s report, athletic event). In this case it is the student’s responsibility to schedule another time to make up the lab and have the TA or instructor verify the work. If you have made significant progress during the lab but have not finished, you may be allowed to schedule additional time at the instructor’s discretion.

Lab partners: The class size requires that most students work in groups of two. Each student must submit his/her own completed lab assignment.

Participation grades count for 25% of your lab grade. We will keep records of attendance at the lab and may deduct points from your participation grade if your lab partner appears to be doing all the work.

Homework: Homework assignments are due by Wednesday of the week after the lecture in which they are assigned. Late homeworks will not be accepted.

Exams: There will be one midterm exam and one final exam. The material for the exam is based on the lectures, not just on the labs. Some material may be covered in the lectures which is not covered in the labs (especially toward the end of the semester).

Academic Integrity

Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual

suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Disability Services

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services](#) (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Statement on Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.