



INSTRUCTOR'S COURSE REQUIREMENTS

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COURSE: ELN 131 Analog Electronics I

SEMESTER & YEAR: 2017 Spring

INSTRUCTOR'S NAME	SECTION #	CLASS MEETING TIME	OFFICE HOURS AND OTHER CONTACT INFORMATION
Billie Adeimy	01	T,TH 12:25 – 2:45 F 1:25 - 2:15	Office Hours: M,W 12:10 – 12:25, 2:45 -3:00 T,TH 12:10 – 12:25, 2:45 -3:15 F 12:10 – 12:25, 1:15 -1:25 Office Location: Forte 327 Phone: 410-1901 Email: bladeimy@richmondcc.edu

METHODS OF INSTRUCTION AND EVALUATION:

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
1. Identify, select, and use diodes and transistors.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> • Draw a diode symbol and label the anode and cathode. • Describe how to test a diode using DMM and VOM. • Describe the relationships among the base, emitter, and collector currents of a bipolar junction transistor. • Label the three regions of operation of BJT collector graph. • Describe how to test a BJT in and out of a circuit. • Describe the basic construction of a JFET. • Draw the drain and transconductance graphs. 	<ul style="list-style-type: none"> • Exam Lab • performances

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
2. Analyze diode circuits	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> • Draw a diagram of a half wave rectifier and explain how it works. • Draw a diagram of a full wave rectifier and explain how it works. • Analyze a diode circuit using first and second diode approximation. 	<ul style="list-style-type: none"> ▪ Exam Lab ▪ performances
3. Analyze linear power supply circuits.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Analyze a capacitor input filter and its surge current. ▪ Show how the Zener diode is used to regulate voltages in a power supply. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
4. Analyze transistor amplifier circuits.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> • Determine how to draw the load line and calculate the Q point for a given VDB circuit. • Compare several different types of bias and describe how well each works. • Troubleshoot transistor-biasing circuits. • Analyze an amplifier that uses VDB and BJT. • Analyze an emitter follower for DC and AC operation. • Explain how swamped amplifier works. • Analyze a two-stage CE amplifier. • Describe the purpose of cascading CE and CC amplifiers. • Calculate the MPP with CE and CC power amplifiers. • Troubleshoot CE amplifier circuit. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
5. Analyze transistor switching circuits.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Describe how the BJTs are used in switching applications. ▪ Describe how EMOSFETs are used as a digital switch. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
		<ul style="list-style-type: none"> ▪ Draw a schematic of a typical CMOS digital switching circuit and explain the operation. 	
6. List the characteristics of ideal op-amps.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ List the characteristics of ideal op-amps and 741 op amps. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
7. Analyze basic op-amps feedback circuits.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Analyze an op-amp inverting amplifier. ▪ Analyze an op-amp non inverting amplifier ▪ Analyze an op-amp unity gain amplifier. ▪ Analyze an op-amp summing amplifier 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
8. Anticipate and utilize the appropriate laboratory testing equipment such as the power supply, oscilloscope, function generator, curve tracer, and digital multimeter to implement, measure, compare, and explain experimental circuit results.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use the multimeter, power supply, oscilloscope, and function generator, curve tracer, to measure, compare and explain circuit results. ▪ Use the components (resistors, capacitors, coils, diodes, transistors) and circuit breadboard to build various electronic circuits. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
9. Demonstrate critical reasoning and problem solving abilities through the use of simulation software for designing and troubleshooting practice.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use Multisim to simulate various electronics circuits. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
10. Identify and demonstrate safe workplace practices.	<ul style="list-style-type: none"> ▪ Lecture 	<ul style="list-style-type: none"> ▪ Explain and use safe workplace practices. 	<ul style="list-style-type: none"> ▪ Lab performance

TENTATIVE CLASS SCHEDULE AND ASSIGNMENTS:

- A. Semiconductor diodes
- B. Diode applications
- C. Zeners and other two-terminal devices

**** First test**

- D. Bipolar junction transistors
- E. DC Biasing: BJT's
- F. Transistor modeling

**** Second test**

- G. BJT small-signal analysis
- H. FET
- I. FET switching applications
- J. Op –Amp
- K. Op-Amp feedback circuits

**** Third test**

***** Final**

Evaluation. The final grade will be based on the following criteria:

***The completion of all elements from the following list are mandatory to meet the requirements of this class with a passing grade.

***The project will be announced later in class and is the sole responsibility of the student. It will include building a physical product that meets outlined criteria.

Three exams	30%
Labs	15%
Project	15%
Quizzes	20%
Final exam	20%
	100%

CLASS GUIDELINES AND OTHER REQUIREMENTS:

1. **Instructor:** Billie Adeimy
2. **Email:** bladeimy@richmondcc.edu

3. Attendance for ELN 131:

Promptness and regular class attendance are expected of all students. An absence, excused or unexcused, does not relieve the student of any course requirement. Attendance is required and punctuality is expected! A student is responsible for all the work, including tests, quizzes, lab work and any other assignments, of all class meetings. Following are the guidelines used by RCC Engineering department regarding students' attendance.

1	Missing a test or a quiz (Unexcused absence)	Student will receive a grade of zero
2	Missing more than 10% of classes (Unexcused absence)	Student's grade will be dropped by 5 points
3	Missing more than 3 labs	Student will receive an incomplete
4	Tardy	Equals 10 minutes of missed class or lab time
5	Three tardy accounts	Equals one absence

4. **Grading Scale:** The RCC grading scale: **93-100 (A), 85-92 (B), 78-84 (C), 70-77 (D), below 70 (F)**. Students in health related curricula must obtain a minimum grade of C in each major course in order to progress to the next semester. All students must obtain a grade of C in core curriculum courses in order to graduate.

5. **Withdrawal:** If you are going to drop one or more classes, you should follow the school's procedure. See a counselor or your instructor and obtain a drop form. This form should be signed by your instructor and returned to Student Development. You may also withdraw over the telephone by calling Student Development.

6. **Responsibility for Work:** The student is responsible for all material, assignments, and announcements in class. If you miss class, you should get class notes and assignments from another student or contact the instructor.

7. **Discipline Policy:** The school has a discipline policy which will be enforced. Under it, the college has the right to decline admission, to reprimand, to place on probation, to suspend, to expel, or to require the withdrawal of a student for just cause when it is deemed in the best interest of the college. A list of offenses is found in the College Catalog.

8. **Grievance Procedure:** If you have a complaint, try to work it out with the instructor. If this is not possible, talk to the department chair. If you can't work out the problem with the department chair, talk to the division chair for the department. If the issue still cannot be resolved, then talk to the Vice-President for Instruction.

Department Chair Contact Information:

Amir Niczad

Email Address: asniczad@richmondcc.edu

Office: Forte 315

Office Phone: 910-410-1872

9. **Other Notes:** It is against school policy for children to accompany adults to class. It is against school policy to have food or drinks in classrooms.

10. **Final Exam:** The final exam for this course is scheduled for **Last Day of Class**.

Note: If the college is closed during any of the exam days, the exam schedule will resume on the next day the college is open, completing the remaining exams.

11. **Academic Freedom:** Students' rights to express dissenting opinions from that held by the instructor are upheld. No student will be penalized for disagreeing with the instructor's opinion. However, students should know the difference between opinion and fact, as factual information is not subject to debate.

12. **Internet Use in the Classroom:** Connecting classrooms to the Internet and college computing resources opens immense possibilities for learning—but it also opens the risk of **losing student attention** to e-mail, instant messaging, web surfing, MP3 downloads, and even network hacking. Due to the increasing demands in technology and education, the internet is deemed necessary but should not be abused or accessed while in the classroom for these purposes.

While in the classroom, Internet access is **prohibited while the instructor is lecturing** or when the class is involved in classroom exercises that do not include the internet. Internet activity will only be permitted when authorized by the instructor. There are **NO** exceptions to this classroom Policy.

13. **Late Work:** Assignments submitted late will be assessed a penalty of **-5 points** per school day late. Monday-Friday is counted 1 day each (weekends are counted as one day). The late penalty policy does **NOT** apply to the final term project, simply because late final projects will **NOT** be accepted due to end-of-the-semester grading constraints.

14. **Makeup Tests:**

When students have missed a test, the student may be allowed to make up the test **ONLY** if the instructor permits. Otherwise **ALL** test should be taken at the appropriated times.

15. **Cell Phones and Electronic Devices:** Classroom disruption by cell phones or other electronic devices is prohibited. All cell phones and similar electronic devices must remain turned off and out of sight for the duration of class. This includes headphones and Bluetooth devices. Personal Laptops, Net-books, I-pads, etc. are also prohibited without prior permission from your instructor. **If a student violates this policy, they will be asked to leave the classroom and be counted absent for the remainder of the class period or surrender their cell phone to the instructor for the remainder of the class. If a cell phone or an electronic device is used for cheating during a test, a student will be given a zero and given a failing grade for the class.** Cheating at RCC is not tolerated and may result in further disciplinary action. Exceptions to this policy, needs prior approval from the instructor before the class starts.

16. **Classroom and Campus Security requirements: Student IDs:** It is **required** that Student IDs be worn at **ALL** times while on Campus. All IDs must be clearly displayed on the front of an individual. Failure to display your Student ID on an on going basis will be Reported to the VP of Student Development and may result in disciplinary action.
Classroom Doors: The door will remain **locked** at all times while class is in session. (This is according to college policy.)

17. **RCC's Dress Code**

Appearance: You are expected to dress appropriately for the classroom environment. Sagging pants, clothing/jewelry with drug related signs, low cut tops, see through garments, too-short shorts, short skirts, leggings worn alone, halter

tops, short midriff tops are not acceptable. No hats or head gear are allowed in the classroom. No gang affiliation is to be displayed. The instructor will notify any student if he/she is inappropriately dressed. If a student is found in violation of the above dress code, the garment error will be immediately corrected and the student can remain in class; or the student will be sent home to correct the garment error; or failure to comply with garment error will result in the student being referred to the Discipline Committee.