



INSTRUCTOR'S COURSE REQUIREMENTS

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COURSE: ELC 131 **CIRCUIT ANALYSIS I**

SEMESTER & YEAR: Fall 2017

INSTRUCTOR'S NAME	SECTION #	CLASS MEETING TIME	OFFICE HOURS AND OTHER CONTACT INFORMATION
Amir Niczad	03	M W 1:25-2:40 PM M W 2:50-4:05 PM	Office: Forte 315 Office Hours: M W 11:20-12:00, 01:00-01:20 TTH 11:20-12:20, 3:20-04:00 Office Phone: 910-410-1872 Email Address: ASNICZAD@richmondcc.edu

METHODS OF INSTRUCTION AND EVALUATION:

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
1. Identify and describe the characteristics and operation of components used in DC/AC circuits.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Describe the differences between conductors, semiconductors and insulators using atomic structure concept. ▪ Define coulomb, potential difference, current, resistance, and conductance. ▪ Define the difference between electron flow and conventional current. ▪ Explain the difference between a potentiometer and rheostat. ▪ Interpret resistor color codes to determine the resistance and tolerance of a resistor. ▪ Explain the significance of a resistor's power rating. ▪ Define frequency and period. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
<p>2. Apply math formulas and circuit theorems in the analyses of DC/AC Circuits.</p>	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use Ohms law to calculate current, voltage, resistance, and power in DC/AC circuits. ▪ Simplify the analysis of a bridge circuit by using delta to wye conversion formulas. ▪ Calculate the rms, average, and peak-to-peak values of a sine wave when the peak voltage is given. ▪ Calculate the wavelength when frequency is known. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
<p>3. Construct, analyze, and troubleshoot series, parallel, and combination circuits.</p>	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Describe the characteristics of series, parallel, and combination circuits. ▪ Calculate the total resistance, currents, voltages, and power in series and parallel circuits. ▪ Calculate the total resistance, currents, voltages, and power in series-parallel circuits. ▪ Describe the effect of a short or open in series, parallel, and series-parallel circuits. ▪ Explain voltage divider and current divider circuits. ▪ Calculate the voltage drops in an unloaded voltage divider circuit. ▪ Calculate branch currents in a parallel circuit using current divider formula. ▪ Define what is meant by the term loaded voltage divider 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
<p>4. Describe inductance, capacitance, inductive reactance, and capacitive reactance.</p>	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Describe the magnetic field surrounding a magnet. ▪ Describe the magnetic field of an electric current. ▪ Explain induced voltage ▪ Explain the basic construction and operation of an electromechanical relay. ▪ Explain the concept of self-inductance. ▪ Explain how induced voltage opposes a change in current. ▪ Describe how a transformer works. ▪ Calculate the current and voltages of a transformer circuit. ▪ Calculate the total capacitance in a series, parallel or series-parallel capacitive circuits. ▪ Calculate the energy stored in a capacitor. ▪ Describe how to test a capacitor. ▪ Explain how capacitors pass AC and blocks DC. ▪ Describe how a capacitor charges and discharges. ▪ Explain why the current leads voltage by 90° for capacitor. ▪ Explain why the voltage leads the current by 90° for an inductor. ▪ Calculate the total current, equivalent impedance and phase angle of parallel RC and RL circuits. ▪ Determine the total impedance, current, voltages, and phase angle for a series RLC circuit. ▪ Determine the total impedance, current, voltages, and phase angle for a parallel circuit 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances

STUDENT LEARNING OUTCOMES	METHODS OF INSTRUCTION	SUCCESSFUL PERFORMANCE/BEHAVIORAL INDICATORS	METHODS OF EVALUATION
5. Display proficiency in using MultiSim (simulation software) to build and test operation of a circuit.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use MultiSim software to analyze both DC and AC circuits. ▪ Use MultiSim software to analyze series, parallel, and series-parallel circuits. 	<ul style="list-style-type: none"> ▪ Lab performances
6. Locate and select DC/AC devices using component specifications based on circuit requirements.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use datasheet information to match components to circuit requirements. ▪ Display a basic understanding of component substitution in the case of part unavailability. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
7. Select and demonstrate the use of appropriate test equipment to analyze circuit operation.	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Use appropriate test equipment in a given situation. ▪ Use test equipment correctly. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances
8. Identify and demonstrate safe workplace	<ul style="list-style-type: none"> ▪ Lecture ▪ Lab 	<ul style="list-style-type: none"> ▪ Explain basic workplace safety procedures and purpose for such protocol. ▪ Practice safety protocol when in the classroom/Lab environment. 	<ul style="list-style-type: none"> ▪ Exam ▪ Lab performances

TENTATIVE CLASS SCHEDULE AND ASSIGNMENTS:

- A. Electricity
- B. Resistors
- C. Ohm's Law
- D. Series circuit
- E. Parallel circuit
- ** First test
- F. Series-parallel circuit
- G. Voltage dividers, current dividers, and Kirchhoff's Laws
- H. Magnetism and electromagnetism
- I. Alternating voltage and currents
- ** Second test
- J. Capacitance
- K. Capacitive reactance and capacitive circuits
- L. Inductance and transformers
- M. Inductive reactance and reactive circuits
- N. AC (RLC) circuits
- O. Resonance
- ** Third test
- *** Final Exam

CLASS GUIDELINES AND OTHER REQUIREMENTS:

Materials Flash drive
 scientific calculator
 Notebook/loose-leaf paper/typing paper
 Pencil/Pen

Policies and Important Information

1. **Instructor:** Amir Niczad
2. **Email:** asniczad@richmondcc.edu

3. **Attendance:**

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 average grade will be dropped by 5 points.
3	Missing more than 3 labs	Student will receive an incomplete
4	Tardy	Miss more than 10 minutes of class or lab time
5	Three tardy accounts	Equals one absence

4. **Grading Scale:** The final grade will be based on the following criteria:

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Three exams	37.5%	(300 Points)
Labs.....	25%	(200 Points)
Final test	25%	(200 Points)
Quiz	12.5%	(100 Points)
	100%	800 Points

93-100 (A), 85-92 (B), 78-84 (C), 70-77 (D), below 70 (F).

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 Dean of the engineering department. If the issue still cannot be resolved, then talk to the Vice-President for Instruction.

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. **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.

14. **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.

15. **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 ongoing 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.)

16. **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.

17. **Contacting Instructor**

I am normally available during my posted office hours. I am available at other times if needed. The best way to contact me, by far, is e-mail or phone. Regardless of contact method, I return messages no later than one business day except under extenuating circumstances. If you are having a problem with your instructor you may discuss the issue with my immediate supervisor Dr. Devon Hall, Dean of Applied Sciences & Engineering. Dr. Hall's office is located in the Lee building room 059. Dr. Hall can also be reached by telephone at (910) 410-1912 or by email at dghall@richmondcc.edu