

 Lebanese American University	ELE 303	
School of Engineering	Electrical Circuits II Lab [Required]	1 credit
Department of Electrical and Computer Engineering	Tuesday 16:00 – 18:50 Section 33	ELRC 5107
Course syllabus	Instructor: Ronald Kfouri ronald.kfour@lau.edu.lb	Fall 2018

1. Course Description and Course Prerequisite

Laboratory experiments in basic electrical components such as resistors, capacitors, inductors, transformers, and voltage and current sources. In addition, this lab goes deep into frequency-domain response of circuits, transfer functions, resonant circuits and filter designs. Concurrent with ELE302 Electrical Circuits II.

2. Course Objectives

1. To give the student hands on experience with the equipment and instrumentation.
2. Measure electrical circuit parameters using DMM (Digital Multi Meter).
3. Use Oscilloscopes and other instruments to monitor and collect experimental data
4. Analyze experimental data to verify various laws and theorems of electrical circuits.
5. To experience and observe, first hand, the practical aspects of electronic circuitry.
6. To develop the student's proficiency in taking experimental data and in writing good technical reports.

3. Contribution of Course to Meeting the Professional Component

Professional Component	Credits
Mathematics and Basic Sciences	0
Engineering Topic	1
General Education	0

4. Relationship of Course to Student Outcomes

SO (b): Ability to design and conduct experiments and to analyze and interpret data
<ol style="list-style-type: none"> 1. Designs an experiment including determining the data to be collected and selecting the appropriate tools 2. Conducts an experiment 3. Gathers relevant data in an experiment 4. Analyzes and interprets data, presents results, and draws conclusions
SO (d): Ability to function on multi-disciplinary teams
<ol style="list-style-type: none"> 1. Exhibits dedication to teamwork. 2. Collaborates with team members to achieve a common goal. 3. Respects other team members, contributes to consensus and conflict resolution.
SO (k): Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
<ol style="list-style-type: none"> 3. Uses computer programs necessary for engineering practice. 4. Uses modern instrumentation to conduct experiments.

5. Course Outline

Session 1-Week 1	Experiment 1: Measurement and Calculations of D.C. Electrical Quantities + Spice Tutorial
Session 2-Week 2	Experiment 2: Resistors and Capacitors (Series and Parallel Circuits)
Session 3-Week 3	Experiment 3: Kirchhoff's Current and Voltage laws & Nodal and Mesh Analysis
Session 4-Week 4	Experiment 4: Thevenin's Theorem
Session 5-Week 5	Experiment 5: Introduction of the Oscilloscope and Function Generator
Session 6-Week 6	Experiment 6: Operational Amplifiers: Introduction
Session 7-Week 7	Experiment 7: Operational Amplifiers: Applications
Session 8-Week 8	Experiment 8: Transient response of an RLC-Circuit part a
Session 9-Week 9	Experiment 9: Transient response of an RLC-Circuit part b
Session 10-Week 10	Experiment 10: Frequency response of simple RLC-Circuits
Session 11-Week 11	Final Exam

The time of midterm examination is excluded from the above schedule.

6. Required tools / software / skills

ORCAD PSPICE 15.7

7. Textbook[s]

Lab manuals are to be printed and read before lab sessions.

8. Additional References

Nilsson J. Electrical circuits, 6th Edition.
Johnson D. Electrical Circuit Analysis, Third Edition.

9. Schedule of Exams & Grading Percentage

All experiments must be performed and all weekly submissions of reports completed in order to qualify for a class mark. The final mark will be determined using the following weighting factors:

- Performance and Attendance.....20%
- Reports25%
- Exam 1.....25%
- Exam 2.....30%

10. Course Policies

In order to effectively utilize our laboratory facilities and equipment, students will be asked to work in pairs. Collaboration on experiments and discussion of the results are encouraged amongst partners and groups. Students are graded on their performance and understanding not on their RESULTS. Students are expected to attend all laboratory sessions. Absence, whether excused or not, from any Laboratory session does not excuse the student from his/her responsibility for the work done. Students with a valid excuse will be expected to have a lab make up session. Students are held responsible for all material presented in the laboratory.

Lab reports are due one week after the date of the experiment (one report per group). If for any reason the group does not submit their report on the due date 10 points will be deducted for every day from the report grade, until the group submits his report or a zero is received.

Report copying from previous students, your colleagues or other sections will not be tolerated resulting in a grade of zero on the corresponding report grade which will affect your final grade. Also any inconsistency between the lab performance and report will result in a grade of zero for that report.

Good behavior in the laboratory is expected at all times. You will be graded for keeping a clean lab area and returning items to their proper place.

11. General Comments

Lab Instructor:

Ronald Kfouri
Email: ronald.kfourir@lau.edu.lb

Lab Coordinator:

Dr. Dani Tannir
Available during his own stated office hours on the syllabus of his course, Bassil 106.
Email: dani.tannir@lau.edu.lb

12. General Rules & Regulations

A student can miss no more than 2 sessions of instruction. By the 3rd session, the instructor may ask the student to drop the course.

Plagiarism: Students caught cheating on an exam receives a grade of Zero on the exam in the first cheating attempt and a warning. Students caught cheating for the second time in the same course receives an F grade in the course and a second warning. A grade of zero on an exam resulting from cheating must be counted in the student's course grade.

Any student who receives 3 warning will be suspended