Lebanese American University	ELE	402
School of Engineering	Electronics I Lab [Required]	1 credit
Department of Electrical and Computer Engineering	Monday 13:00 – 16:00 Tuesday 14:00 – 17:00 Wednesday 13:00 – 16:00 Friday 11:00 – 14:00	ELRC 5107
Course Syllabus	Instructor: Mr. Ronald Kfouri Email: ronald.kfouri@lau.edu.lb	Spring 2019

1. Course Description and Course Prerequisite

ELE 402 Electronics I LAB: This Laboratory explores miscellaneous electronic components. Students perform hands-on experiments to analyze circuits that are based on operational amplifiers, Silicon diodes, Zener diodes, Bipolar Junction Transistors (BJTs), and Metal Oxide Silicon Field Effect Transistors (MOSFETs). Students also evaluate circuits with sensors such as Light-dependent resistors and Photodiodes. Concurrent with Electronics I.

2. Course Objectives

1. To give the student hands on experience with the equipment and instrumentation.
2. To develop judgment and skills in experimental work.
3. To experience and observe, firsthand, the practical aspects of electronic circuitry.
4. To develop the student's proficiency in taking experimental data and in writing good technical reports.
5. To give the student an opportunity to function as part of a team and to be aware of some of the problems associated with the process of reducing theory to practice.

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)
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)
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)
3. Uses computer programs necessary for engineering practice
4. Uses modern instrumentation to conduct experiments

5. Course Outline

Week 1: experiment 1: Operational Amplifiers.
Week 2: experiment 2: Operational Amplifiers and Applications.
Week 3: experiment 3: Diode Circuits.
Week 4: experiment 4: Voltage Regulators.
Week 5: experiment 5: Rectifiers.
Week 6: experiment 6: LEDs, Photodiodes, and LDRs
Week 7: experiment 7: BJTs in Saturation.
Week 8: experiment 8: MOSFETs.
Week 9: experiment 9: BJT Amplifiers.
Week 10: Phase 1 of the project.
Week 11: Exam.
Week 12: Final Project Presentation.

6. Required tools / software / skills

OrCAD PSPICE

7. Textbook[s]

Lab Manual can be downloaded from Blackboard.

8. Additional References

A. S. Sedra and K. C. Smith, Microelectronic circuits, Seventh edition. Saunders, Philadelphia, 2015.

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:

- Lab Reports 25%
- Exam I..... 20%
- Exam II.....30%
- Project.....25%

10. Course Policies

- 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 or for any announcements made during his/her absence. 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) at the beginning of the session. If for any reason the group does not submit their report before the deadline, a zero is received.
- Cheating attempts, in-lab inter-student information exchange, report copying, common work between students of different groups… etc. will not be tolerated resulting in a grade of zero or F on the corresponding report grade which will affect your final grade. Also any inconsistency between the lab performance, report, work or behavior will result in a grade of zero on report grade.
- Exams are to be done individually. No offense will be tolerated and LAU plagiarism rules will be enforced.
- Good behavior and class discipline in the laboratory is expected at all times and is accounted for in the final grade. You are expected to keep a clean lab area and return items to their proper place.

11. General Comments

- Lab reports are the working fields of what has been undertaken and the results obtained. The record kept must be complete, self-contained, neat and orderly.
- Accuracy of the results measured in the experiment, justification of errors, relationships to theoretical values and system analysis are the most important ingredients in a lab report. A good report will have to take into account all of to the actual data taken from the equipment.
- Incomplete grades will be issued in the rare cases when students have completed all the course requirements and missed, for a valid excuse issued by the guidance office, the final exam.
- Any Student whose name appears on the class list and stops attending classes and exams without officially withdrawing from the course will receive a failing grade “F".
- The instructor reserves the right to make adjustments to the experiments. These adjustments include adding, deleting, or modifying some experiments. Students will be notified beforehand.
- It is expected of the students to carry themselves with the utmost ethical and professional manners during lab sessions and among each other.

12. General Rules & Regulations

The LAU Student Code of Conduct (http://www.lau.edu.lb/about/governance-policies/policies/student_code_of_conduct.pdf) will be strictly enforced. The following is a brief reminder of some violations:

- Unauthorized use of equipment or material on exams and projects.
- Cheating, copying, collaborating with, or aiding another student in a manner not permitted by the instructor.
- Stealing or circulating an exam or an assignment.
- Impersonating another student or an LAU official.
- Outsourcing projects or assignments or submitting identical coursework.
- Plagiarism and the inappropriate use of copyrighted material.

13. Person who prepared this description and date of preparation

Ronald Kfouri - January 14, 2019