Lebanese American University	ELE	540
School of Engineering	Communication Systems Lab [Required]	1 credit
Department of Electrical and Computer Engineering		ELRC 5202
Course Syllabus	Instructor: Mr. Ronald Kfouri Email: ronald.kfouri@lau.edu.lb	Fall 2021

1. Course Description and Course Prerequisite

ELE 540 Communication Systems Lab: Laboratory experiments in Communication Systems.
Course Prerequisite: ELE 538 – Communication Systems

2. Course Objectives

On one hand to learn and explore the common functions and tools used in communications systems while focusing on MATLAB and SIMULINK. On the other hand, this course demonstrates the basic properties of various modulation and demodulation techniques by building and testing the corresponding circuits.

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.5 An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. 5.1 Ability to collaborate and lead 5.2 Ability to practice collective decision making and task planning 5.3 Ability to meet objectives
SO.6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. 6.1 Ability to develop and conduct experiments 6.2 Ability to analyze and interpret data 6.3 Ability to use engineering judgment to draw conclusions

5. Course Outline

Week 1: Introductory Lecture
Week 2: MATLAB Chapter 1
Week 3: MATLAB Chapter 2
Week 4: MATLAB Chapter 3
Week 5: MATLAB Chapter 4
Week 6: Experiment 1: Amplitude Modulation (AM)
Week 7: Experiment 2: Angle Modulation Techniques (FM & PM)
Week 8: Experiment 3: Digital Modulation Techniques (ASK, FSK, and PSK)
Week 9: Experiment 4: Demodulation of AM Signals
Week 10: Experiment 5: Demodulation of Angle Modulated Signals
Week 11: Experiment 6: Demodulation of Digital Modulated Signals
* The schedule is approximate and excludes the time allocated for examination and project

6. Required tools / software / skills

Modulation/Demodulation Boards and measurement equipment available in the Lab.
MATLAB/SIMULINK 2015 or newer

7. Textbook[s]

Lab Manuals and Notes - can be downloaded from Blackboard.

8. Additional References

Leon W. Couch II, “Digital and Analog Communication Systems”, Prentice-Hall, Seventh Edition, 2007.

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 following tentative percentages are assigned to the course grade. These percentages are subject to change, depending on exam delivery options/campus lockdowns.

- MATLAB Sets.....25%
- Lab Reports 15%
- Exam 30%
- Project.....30%

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.
- 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 performance includes preparation, attitude, punctuality, participation, skill and general conduct in laboratory work. It is the student's competence in performing the required lab work in an acceptable manner and within a reasonable period of time. A student's "Lab Performance "mark is based on the instructor's assessment of the student's day-to-day lab Performance, in-class observation, and oral evaluations at the end of a lab session.
- Arriving late or not being present on the day assigned will be considered unsatisfactory performance for that part of the work. Students who are persistently late in submitting reports will be considered to have poor performance.
- 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 ingredient 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 from the students to carry themselves with the utmost ethical and professional manners during lab sessions and among each other.
- In order to improve the effectiveness of the educational process, all students are expected to submit their course evaluations by the last day of classes. Students who fail to completer the evaluation of all registered courses by the set deadline will not be able to access their course grades from Banner or Portal until two weeks after the end of the final exams period and will not be able to request transcripts. Anonymity of the process and the students will be maintained at all times.

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(s) who prepared this description and date of preparation

Ronald Kfouri – August 2021
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