GEORGIA INSTITUTE OF TECHNOLOGY
School of Electrical and Computer Engineering
ECE2026
Introduction to Signal Processing

Guidelines for Writing Formal Lab Reports

The format required for the formal lab reports is detailed below. Each report should be a well-organized document that not only provides what was done in the lab project, including all relevant results, but also discusses the solution or outcome in a way that demonstrates your knowledge of the topic. Suggestions on relevant topics for further exploration or observations that arouse curiosity will be considered nice addition to the report.

The total length of the report in ECE2026 should be less than 8 pages (excluding the title page). Think carefully about what the imperative components, e.g., which plots, to include in the report, and reduce their sizes properly without compromising legibility.

The font size must be no less than 10 point.

The title page should contain the following information: course name and section, report title, your name, name of your grader, and date. See the example on the next page.

Number all pages, figures, tables, etc.

It is strongly recommended that the report be typed. If you choose not type your report, you must neatly print your report and write on one side of the page only. Regardless of whether you type or print your report, it is expected that the report is well organized, neat, and easy to read.

In order to make a professional looking report, use CUT and PASTE so that you will have the text and graphics on the same page (i.e., graphics should not be included at the end of your report). Matlab allows you to copy the figure window, after which you can paste the graphic directly into a Word document (or whatever windows-based word processor you're using). If the version of Matlab you're using doesn't allow you to copy figures, you may use the old-fashioned method (scissors and tape).

Figures, tables, etc. are not self-explanatory! All figures, tables, etc. must be clearly and appropriately labeled. For example: "Figure 1. Instantaneous Frequency Plot" is not an appropriate figure caption as it is too vague (especially if you have several plots of the instantaneous frequency for various cases). **A figure caption is too vague if it could also describe another figure/table.** A more appropriate caption would be "Figure 1. Instantaneous Frequency vs. Time for Case 1" (assuming the reader knows what Case 1 refers to, but you get the idea). In addition, all axes on figures should also be labeled appropriately with the quantity measured and the units. Finally, all figures, tables, etc. should be introduced and explained within the text of your report.

Matlab code should be presented with a clear distinction (e.g., in a separate text box with a different font style) from the running text. In general, code should be adequately commented. If the code is for a function, the comment/help section that explains the usage of the function must be included.

The report should begin with an Introduction section. In this section, you should describe the objective or purpose of the project you are reporting on, as well as any background information necessary to

understand the rest of the report. After reading the Introduction, the reader should have a general idea of what your project is about and what the goals/objectives of the project were.

The organization of the rest of the report is left up to you; however, it must be well organized! One way to organize your report would be to start with a general description of the overall system in terms of the major tasks involved in your implementation of the system. Then, for each major section of the project, explain the methods used to perform the section's function and show any supporting data, graphs, etc. you feel are necessary. Finally, explain how all the sections put together implement the system in question. If in the project you are implementing more than one system to perform the same (or similar) function, it is then appropriate to compare and contrast the two systems (in a Conclusion section).

You know you've done a good job in your reporting if a fellow classmate of yours (who isn't necessarily familiar with the lab you're reporting on) understands what the lab was about and could possibly reproduce what you've done after reading your report. Also (and perhaps more importantly from your perspective, the grader should be able to easily determine whether or not you understand the concepts presented in the lab.

GRADING: The quality of the writing will be a factor in the grading, so take some care in the presentation of your results. The only way that this will work is if you do the solution well before the deadline and make a rough draft of the write-up at least 24 hours before the deadline. Then, the all-important "last minute" can be spent polishing up the write-up!

ECE2026

Introduction to Signal Processing

Lab Report 5

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Lab Section:	LXX
Recitation Instructor:	Tony Yezzi
Submitted to:	Volkan CEVHER

1. Introduction

Write what the lab is about. It may include the answers to the following questions:

1) What is the purpose of this lab?

2) What did you expect to learn in this particular lab?

2. Work Done

- Describe the procedure, including each and every step that you have carried out for the assignment with explanations on the purpose of the step, its purpose, and the expected observation or outcome.

- Present your results for each and every step. Present your plots with appropriate labels and titles. You should also make proper references to these plots when stating your results.

- Theoretical calculations. Please do not just state what the result is. How you reach that result is as important as the result itself. Explain the connection between mathematical algorithms and your MATLAB code. Point out the projected or anticipated result based on theory and compare that with what you are able to produce with your code. This also demonstrates your basic understanding of the implied theory behind the code and the algorithm.

- Additional explanations. Writing lab reports does not only mean giving plots and codes. Try to elaborate on the results. Think about possibilities of expanding or generalizing the result you have obtained for the assignment; e.g., ask yourself many “what if” questions and make some attempts to answer them, if you can. This way, you will understand better.

3. Conclusion

There are a couple of ways to write a conclusion for a lab report:

1) State the important results. What do they actually mean? What do they imply?

2) Any problems encountered during the lab or while writing this report. How did you tackle with them? Also, elaborate on what you did in order to solve them if you were unable to solve them.

3) Write your comments. Did you learn what you’d expected?