

REPORT CONTENTS

Title Page - Lab# and Title, Course Number, Student Names, Date Submitted

Abstract - Briefly summarize the rest of the report including the objectives of the lab, what was actually done, the most important qualitative and quantitative results, and your conclusions. The abstract should be less than 200 words.

Introduction

- Provide an overview of the project objectives, design requirements and assumptions.
- Sketch or map your overall track design and give a qualitative description of features. Describe your design process.

Design (should have accompanying diagrams, can be handwritten)

- For each unique track element and transition region provide a qualitative description, a clear mathematical specification, and a sketch.
- Show a FBD and accelerations for all critical points. **These diagrams can be side by side, but must be distinct, i.e. do not put them together.**
- Show the equations used to select characteristics of the section.
- Give expressions for the acceleration and G loading of the train throughout the track section.

Performance Analysis

- Plot the up/down, forward/backward, and lateral G loads as a function of position s along the track. Please make sure to identify the sections on your figure.
- Plot the train speed as a function of position along the track.
- Describe the overall performance of your coaster. Discuss any remaining problems in the design. Would your design be safe and practical to actually build and run?
- Extra Credit – What is the duration of your ride?

Conclusions and Recommendations – Summarize your design experience. What was learned from the design? Did you meet the requirements? What possible improvements could be made to your design and to the assignment?

References - List reference material used in professional format. Each reference must be cited in the text.

Acknowledgements - Describe assistance or contributions provided by classmates or others (not including group members who authored the report).

Appendix A – List the contributions of each member of the group and have each group member initial this page.

Appendix B, C, etc - Include any computer code you used to compute values or generate plots.

REPORT GRADING

	Title Page
10	Abstract
	Table of Contents
5	Introduction
35	Design: FBD's, equations, description, software (see below)
20	Performance (10 pts for plots, 10 pts for discussion)
10	Conclusions and Recommendations
5	References & Acknowledgments
15	<u>(Style and Clarity - includes title page, ToC, organization, grammar, spelling)</u>
100	

Deductions

One point will be deducted for each missing unit or label on plot axes (up to 10 points).

TAs will have discretion to deduct up to 5 points for using font sizes in your plots that are too small.

It is not enough to write Matlab code that gives you the right answer. Your code should be easy to follow and use structured programming methods. To encourage such coding, a Matlab style score will be included in the design score. To receive the highest score, you will need the following:

- Each piece of code should have the input and output clearly defined, with units.
- Use self-documenting variable names (but don't go crazy. V is fine. You do not have to call the variable Velocity).
- Ugly things should go in functions (ask me or the TAs if you would like examples of what I mean by ugly).
- Name(s) of the programmers should be at the top of the code.
- A short purpose for each piece of code should be provided (one sentence is sufficient).
- Some commenting is required (not a huge amount – but enough that the reader can see what you were up to).
- The TAs have requested that you print out the Matlab code as it would appear on the screen – not combining columns.