Lab 1 Submission Sheet

Keep answers as short as possible while still meeting specifications. Submit as a PDF.

## Section 4: Acceleration Plots and Analysis

This submission item will cover multiple questions from section 4:

* How many m/s^2 does one accelerometer unit represent?
* What are the x, y and z axis zero acceleration measurements?
* What are the mean, standard deviation, standard error and 95% confidence bounds for a static acceleration measurement in the z direction?

Answering these questions requires data from your accelerometer, which you should include in this submission as three graphs depicting data from the same trial, one showing x acceleration, one showing y acceleration, and one depicting z acceleration.

Effort Specification:

* ☐ Includes three plots of data from the accelerometer that show x, y and z acceleration values.
* ☐ Plots are labeled (in title or caption) to indicate which is x, y and z.
* ☐ z plot is different from x and y plots.
* ☐ Vertical scale is set to show variations in the data values.
* ☐ Y-axis is set so we can easily read off values.
* ☐ Includes some calculations for each question.

Complete Specification:

* ☐ Calcuations that relate acceleration due to gravity to one Teensy unit are correct.
* ☐ Take the mean of data to calculate the resting offset values. Report them clearly.
* ☐ Includes correct calculations of descriptive statistics.

## Section 7: Paste the code used to navigate the obstacle course

Complete Specification:

* ☐ Present and reasonable.

## Section 8: Plot acceleration measurements vs. the sample number from a run in the obstacle course. (No need to convert the x-axis to time.)

Effort Specification:

* ☐ Present and interpretable.

Complete Specification:

* ☐ Shows multiple acceleration events that suggest motion through an obstacle course.
* ☐ Scale is legible and data is cropped to just the run through the obstacle course, omitting getting the robot into the tank, fishing it out, etc.

## Section 8: Write a formula for peak acceleration of a robot from rest, calculate the predicted acceleration that formula makes, and compare that value to the peak acceleration observed in your measurements.

Effort Specification:

* ☐ Appropriate governing equation copied from E79 notes.
* ☐ Equation manipulated into a form that predicts peak acceleration from rest.

Complete Specification:

* ☐ Annotation of the obstacle course acceleration plots show the measured peak acceleration from rest.
* ☐ Theoretical numbers for thrust extracted from E79 resources
* ☐ Thrust and mass are used to predict theoretical peak acceleration.
* ☐ Comment on differences between theory and measurement.