ECE 376 - Term Project

Due Friday, May 5th, 2023
You may work in groups of 1 or 2 for this project

Your choice for what kind of term project:
- Hypothesis Testing (front of page)
- Embedded System Design (back of page)

Option 1: Hypothesis Testing
- Use your PIC board to collect data
- Use statistics to answer that question
- Use at least one interrupt in a meaningful way

1) Hypothesis / Question
- Ask a question which can be answered by collecting data with a PIC microprocessor
- Pose a hypothesis that can be tested with a PIC processor.

Some suggestions from previous semesters...
- What is the smallest change in frequency I can hear?
- What is the thermal time constant for an NDSU coffee cup? Does adding a spoon change that?
- Other

2) Design of experiment.

Explain
- What data you will collect
- How you will collect your data (experiment procedure)
- How much data you need (how many samples)
- How you will analyze that data

3) C Code and hardware.
- What you used to collect your data

4) Data.
- What was your raw data.

5) Statistical Analysis
- t-test, chi-squared test, other...

6) Conclusion. What is the answer to your question.

Bonus: 5 point bonus if you present your experiment during dead week on Zoom

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Option 2: Embedded System

- Design an embedded system using your PIC board
- Must include at least two interrupts in a meaningful way
- Must incorporate knowledge from at least 3 different lectures

1) Requirements

- Inputs
- Outputs
- Relationship
- What interupts you're using and what they do

2) Hardware and Software

- Hardware design
- Software C code and flow chart

3) Testing

- Collect data to verify the hardware works
- Collect data to verify each interrupt is working

4) Validation

- Collect data to verify you met (or did not meet) each of your requirements

5) Demo

- Video or in person

Bonus

- 5 point bonus if you present during dead week
- (note: videos work best for live demos - less to haul around and set up)