

# MEEG333 Fluids Laboratory

Fall 2018

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## INSTRUCTOR

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330 Spencer Lab

Office Hours: M-Tu-Wed-Th

TA's

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## Lab Report

Each team will turn in a single report for each experiment, with all team members receiving the same grade. Assume the point of view that you are reporting experimental and analytical results to your employer or client, who will use the information to design a new product, or to more effectively operate a plant or business.

Reports must be printed hardcopy. Reports should be concise, but complete. More than about five pages (excluding cover page & appended data sheets) is getting long. Use your own words; verbatim copying of the lab instructions should be avoided, with exception of the Objectives. Do not pad the length of a report unnecessarily. I grade on merit and content, not weight.

The following outline is general. While all items should be included, you may vary the order and details, always keeping in mind the goal of communicating important results simply and clearly. While not omitting, tedious details may be placed in appendices.

- Title Page
  - Title of Experiment
  - GroupID e.g., Section 20L Team A1
  - Names of group members and role in this experiment
  - Date experiment was performed
  - Date report submitted
- Objectives (will be provided in lab handout)
- Summary
  - Very briefly summarize results of the Design Objectives, See example letter. Tip: Write this item last, as a summary of your conclusions.

- Theoretical background
  - What principle(s) underlie this experiment, e.g., Fluid statics, Bernoulli's law, conservation of momentum...
  - Relevant equations – usually the one used to reduce the data
  - You should not copy or paraphrase the lengthy Theory section of the lab instructions.
- Equipment
  - Include a neat schematic diagram with all parts labeled and dimensioned. **(Photographs are an acceptable alternate, provided they are captioned and key parts labeled).**
  - Show or describe measurement devices and instruments
  - Copying sections of another report or sharing sketches with other groups is **not** permitted.
  - Define of all symbols used, including dimensional units.
- Procedure
  - For each objective in a given experiment:
    - Procedure
    - Parameters varied and range of variation
  - Again, do not copy lab instructions. Use your own words and shorten.
- Results
  - Key data should be rearranged in tabular form. A completely worked-out sample calculation is required for repetitive calculations.
  - Use MS Excel, MathCad (or any other spreadsheet program) for tabulation and plotting graphs.
  - All graphs must have a caption (what is it?), axes must be labeled, and symbols defined.
- Uncertainty analysis as specified in the lab instructions.
  - Suggest ways to reduce uncertainty in the final result.
- Discussion
  - Did the apparatus deliver the results intended.
  - What discrepancies did you see between theory and experiment?
  - If the apparatus malfunctioned or is suspect, say so.
  - Is the data reliable enough for a client to base new design or plant operations on it?
  - What could be done to improve or increase confidence in the results?
- Conclusions (separate from Discussion)
  - Here you present the specific results (data and/or calculations using the data). Give the imagined client your answers to questions.
- Answer the Design Objective Question
- Appendices
  - At a minimum this should be your raw (handwritten) data sheets.
  - It could also be intermediate tables of calculations that would clutter your main report.



