KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
ELECTRICAL ENGINEERING DEPARTMENT

EE 411
Guidelines for Final Report

PART 1: THE STRUCTURE OF CAPSTONE FINAL REPORTS

Your final report should have the following structure:

- **Cover page (Title Page).**
  University name, Department name, Project Title, Authors names, Supervisor name and Date of project completion.

- **Abstract.**
  Short summary of the essential points in report: purpose or problem, method, results, conclusions and recommendations. Always write the abstract AFTER you finish your results and discussion section, as it should summarize your findings.

- **Table of Contents.**
  Use automatically produced table of contents if possible.

- **List of Figures.**
  A list of all the figures with page numbers

- **List of Tables.**
  A list of all the tables with page numbers

- **Chapter 1: Introduction**
  Background, problem or need, purpose of report, overview.
  Start with some basics about the problem to be solved, and then some previous work if any.

- **Chapter 2: Methodology**
  Engineering Design, Construction, Operation.
  How did you approach the solution? What are the building blocks of your design? How did you connect the building blocks together? Describe the operation of your building blocks.

- **Chapter 3: Results**
  Results of the engineering design. Compare with expected results. Include results of each building block, present simulation results and measurements if any. Compare simulation and measured values and discuss sources of error.

- **Conclusions.**
  Interpret the results; what does it all mean?

- **Recommendations.**
  Based on engineering design so far, where to go next?

- **References:**
  List of references used in the report. These references should be properly sited in the body of the report.

- **Appendix or Appendices (if needed).**

PART 2: THE FORMAT OF CAPSTONE FINAL REPORTS

The following points should be considered in the format of final reports:

Typing:

- Avoid printers with fancy print.
- Type on one side of the paper only.
- Absolutely no white our or hand-correction of errors.

Paper: use only white, A4 paper.

Font: use Times New Roman, Arial, or Calibri fonts of size 12.

Spacing: use double or 1.5 line spacing in the body of the report.

Page numbers:

- The page numbers should be inserted in the upper right-hand corner of each page.
- Do not number the title page.
- Use Arabic page numbers for the second part of the report (starting from Chapter 1 to the end of the report).
- Use small roman page numbers for the first part (from the Abstract to anything before Chapter 1).

Margins:

One-and-a-half inch margins from left sides.

One-inch margins from (top, right, and bottom) sides.

Drawings: all the drawings must be generated by computer (not by hand).

Figures:

- Each figure should have a number and caption.
- The captions should be centered under the figure.
- Each figure should be explained or referred to in the body of the report.

Tables:

- Each table should have a number and caption.
- The table captions should be centered above the table.
- Each table should be explained or referred to in the body of the report.

Cover Page or Title Page:

- Start 2.0" from top. Type King Fahd University of Petroleum and Minerals,
- Double space then type Electrical Engineering Department.
- Space down 6 DS ,Type the title ALL IN CAPITAL LETTERS.

- Then space down 4 DS and Type your names, each on a line with one DS in between, capitalizing the first letters only.
- Space down 2 DS and Type "Supervised by Dr. X. Advisor".
- Then space down 2 DS and type the date: January, 2012.

Binding: Use wire-binding from the left side.

PART 3: WRITING EXAMPLES THAT SHOULD BE FOLLOWED

- *Abstract Writing*:
    - Write the Abstract AFTER you finish your report and results.
    - Only describe what you have done, do not use words as "The senior project was a success", "It was a nice experience", etc.
    - If we want to write an abstract to A Temperature sensor project based on some results, we can write:

    Abstract: In this project, we have designed a digital thermometer that works from -15 to 100 C^o. The design was based on using a temperature sensor (TS101) and a conditional amplifier circuit. The circuit provided a constant gain of 20 dB to the analog sensor output. The analog output was digitized using a Microcontroller chip, and the results were displayed on an LCD screen. The readings from this design were compared against a commercial thermometer, and errors less than 5% were obtained.
- *Figures:*
    - Always add a Caption at the BOTTOM to all figures in your report. A Caption is the figure number and description.
    - If you have copied the figure from a reference, ALWAYS cite that, i.e. place the reference at the end of the caption (see Figure example).
    - In addition, always describe the figure in your text. For example:

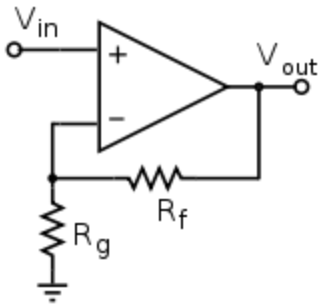

Figure 1: Inverting Op-Amp circuit [1].

Figure 1 shows the circuit configuration of an inverting operational amplifier circuit. The input signal is applied to the positive terminal of the device, and the feedback network that determines the gain of the amplifier is connected between the output terminal and the negative terminal of the device. The amount of amplification is determined by the ratio between the values of R_f and R_g. The relationship is given by:

$$\frac{V_{out}}{V_{in}} = -\frac{Rf}{R_g} \qquad (1)$$

In references:

[1] http://www.wikipedia.com

- *Equations:*
  - Always number your equations
  - Always describe all the terms in your equations
- *Tables:*
  - Always add a Caption at the TOP to all Tables in your report. A Caption is the Table number and description.
  - Describe the table in general and the entries within your text.
  - Example:

Table I: Relationship between the speed and the amount of fuel consumed

Speed (m/min)	20	30	40	50	60	70
Fuel (l)	0.1	0.25	0.4	0.55	0.76	1

In Table I, the relationship between the speed of the motor and the amount of fuel consumed is presented. The table shows that there is a linear relationship between the two, thus when higher speeds are used for the motor, more fuel is consumed to provide this extra speed.

- *Conclusions:*
  - Conclusions should be written after the complete report is finished.
  - Conclusions are written based on the results and observations made from the project.
  - Somehow similar to the Abstract but not exactly the same.
  - Example:

Conclusions: A temperature sensor that can read values between -15 and 100 Co has been designed and implemented. The design was based on the temperature sensor (TS101) along with a conditioning circuit based on an operational amplifier to adjust the sensor values and interface it with a microcontroller board. The analog input was digitized and displayed on an LCD display on the microcontroller board for ease of reading. The results obtained from the designed temperature sensing device were compared against a commercial temperature thermometer. Good correlation between the results was obtained. An error of less than 5% was recorded over the complete operating temperature range.