Ministry of Education



**Al Imam Mohammad Ibn Saud Islamic University**

**College of Engineering**

**Chemical Engineering Department**

**[Project Title]**

**By**

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**Supervised by**

**[Name of supervisor]**

**Submitted in partial fulfillment of the requirements of B.Sc. Degree in Chemical Engineering**

**[Graduation Month & Year]**



**Al Imam Mohammad Ibn Saud Islamic University**

**College of Engineering**

**Anti-Plagiarism Declaration**

This is to declare that the graduation project, produced under the supervision of Dr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and having the title “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” is the sole contribution of the student(s) named below and no part hereof has been reproduced illegally (in particular, cut and paste) which can be considered plagiarism. All referenced parts have been used to support and argue the ideas herein, and have been cited properly. I/we certify that I/we did not commit plagiarize, cheat, and upheld the principles of academic honesty. I/we are responsible and liable for any consequences, if violation of this declaration is proven.

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Dedication

Acknowledgment

**Abstract**

**Note:** The abstract is a summary of the whole project work. It presents all the major elements of your work in a highly condensed form. In the abstract, students should introduce their graduation project, scope of work and state the objectives. Students need to describe the methodology and summarize the main findings of the project. The most common error in abstracts is failure to present results. Approximately the last half of the abstract should be dedicated to summarizing and interpreting your results. The abstract for bachelor’s thesis should not exceed 250 to 300 words.

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**Note:** Insert a Table of Contents (TOC) which lists all the sections of your report (recommended up to 3 levels i.e. Heading1, Heading2, and Heading3) against page numbers, as shown above. In order to insert TOC, click References and select Table of Contents, and select the style of TOC. Update Table of Contents every time you make changes to your report.

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Nomenclature

**Note:** The Nomenclature includes abbreviations and terms found in the thesis that the writer uses frequently and does not define at each usage. The List of Symbols includes all special symbols used in the thesis that the writer does not define at each usage.

Chapter 1

INTRODUCTION

**Note:** After abstract, introduction and conclusions are the two mainly read parts of a report. In this section you can present the following items:

* Problem statement and motivation
* Project objectives
* Proposed solution (tools) or methodology
* Summary of your contributions
* How is the rest of the report organized? You can include a paragraph on the flow of ideas in the rest of the report.

# section heading

Section headings should be left justified, with all letters capital and numbered consecutively, starting with the Introduction. Sub-section headings with the first letter capital, numbered 1.1, 1.2, etc., and left justified, with second and subsequent lines indented. You may need to insert a page break to keep a heading with its text. ‘Heading 1, 1st order heading’ style is available with this template for 1st order section headings, ‘Heading 2, 2nd order heading’ style is available with this template for 2nd order section headings, and so on.

## Sub-section heading

Main body text must be 12 pt., 1.5 line space, justified. Use style “Main text” to format all body text of project report.

### Sub-sub-section heading

Main body text must be 12 pt., 1.5 line space, justified. Use style “Main text” to format all body text of project report.

## General guidelines for the preparation of your text

Avoid hyphenation at the end of a line. Symbols denoting vectors and matrices should be indicated in bold type. Scalar variable names should normally be expressed using italics. Weights and measures should be expressed in SI units.

## Footnotes

Footnotes should be avoided if possible. Necessary footnotes should be denoted in the text by consecutive superscript letters. The footnotes should be typed single spaced, and in smaller type size (8pt), at the foot of the page in which they are mentioned, and separated from the main text by a short line extending at the foot of the column. The ‘Els-footnote’ style is available in this template for the text of the footnote. Footnotes should be avoided if possible. Necessary footnotes should be denoted in the text by consecutive superscript letters. The footnotes should be typed single spaced, and in smaller type size (8pt), at the foot of the page in which they are mentioned, and separated from the main text by a short line extending at the foot of the column. The **‘Els-footnote’** style is available in this template for the text of the footnote.

## Artwork

All figures should be numbered with Arabic numerals (1.1, 2.1,..., n.1) based on chapter numbers. All photographs, schemas, graphs and diagrams are to be referred to as figures. Line drawings should be good quality scans or true electronic output. Low-quality scans are not acceptable. Figures must be embedded into the text and not supplied separately. Lettering and symbols should be clearly defined either in the caption or in a legend provided as part of the figure. Figure number and caption should be typed below the illustration in 11pt and center justified. **‘Els-caption’** style is available in this template for the caption of figures. Artwork has no text along the side of it in the main body of the text. However, if two images fit next to each other, these may be placed next to each other to save space, see Figure 1.1. They must be numbered consecutively, all figures, and all tables respectively. If the figure is taken from any published literature, proper reference must be mentioned by number at the end of figure’s caption, as shown in Figure 1.1.

Note that figures could be included on a next page, if not fitted properly on the same, immediately after the text where they are referred. A maximum of two figures are allowed to include on one page.

BS00559_

Figure .1: Figure style [1]

OR

BS00559_ BS00559_

(a) (b)

Figure 1.1: (a) first picture; (b) second picture [1]

## Tables

All tables should be numbered with Arabic numerals (1.1, 2.1,..., n.1) based on chapter numbers. Captions should be placed above tables, center justified. Leave one line space between the heading and the table. Only horizontal lines should be used within a table, to distinguish the column headings from the body of the table, and immediately above and below the table. Tables must be embedded into the text and not supplied separately. Below is an example which students may find useful. **‘Els-caption’** style is available in this template for the caption of tables. If the table values are taken from any published literature, proper reference must be mentioned by number at the end of table’s caption, as shown in Table 1.1

Table .1: Variation of drag force with the velocity of an object [2]

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

## Equations

Equations and formulae should be typed in “Equation Editor” and numbered consecutively with Arabic numerals (based on chapter number) in parentheses on the right hand side of the page (if referred to explicitly in the text). It is preferable to first insert a table with two columns and one row. Equation must be insert in the left cell while equation number in right cell, as shown in Eq.(1). After writing equation, make table lines hidden.

|  |  |
| --- | --- |
|  | (1.1) |

After writing equation, hide the border of table

|  |  |
| --- | --- |
|  | (1.1) |

## References

References should be added at the end of the report, and its corresponding citation will be added in the order of their appearance in the text by a number enclosed in brackets as [1] or (1). Students should ensure that every reference in the text appears in the list of references and vice versa. The academic style in-text citation and references should follow based on your department requirements as discussed below:

**Chemical Engineering Department** students are recommended to use American Chemical Society (ACS) reference style in project reports. The complete details of ACS referencing can be found at:

<https://pubs.acs.org/doi/pdf/10.1021/bk-2006-STYG.ch014>

**Civil Engineering Department** students are recommended to use American Society of Civil Engineering (ASCE) reference style in project reports. The complete details of ASCE referencing can be found at:

<https://www.canterbury.ac.nz/library/support/citations-and-referencing/asce-citation-style/>

**Electrical Engineering Department** students are recommended to use Institute of Electrical and Electronics Engineers (IEEE) reference style in project reports. The complete details of IEEE referencing can be found at:

<https://pitt.libguides.com/citationhelp/ieee>

**Mechanical Engineering Department** students are recommended to use American Society of Mechanical Engineers (ASME) reference style in project reports. The complete details of ASME referencing can be found at:

<http://libraryguides.missouri.edu/mae/asmecitation>

It is recommended for all discipline students to use reference manager software like Endnote, Mendeley, Refwork, etc. to manage all references in report.

Chapter 2

LITERATURE REVIEW

**Note:** In this section include sufficient background information or literature review about the basic aspects or the theoretical underpinnings of your project which the general reader must understand before knowing the details of your work.

Chapter 3

[DESIGN / DESIGN OF EXPERIMENT / MATHEMATICAL MODELING / SIMULATIONS]

**Note:** The name of this chapter depends on the nature of the project. It is recommended to divide this chapter into following sections:

1. **Project specifications**

* Explain what is novel about what you have done in this project. Here, you must try to think of dimensions of comparison of your work with other work. For instance, you may compare in terms of functionality, in terms of performance, and/or in terms of approach.

1. **Technical section:**

This is the most important section as it describes your design in details. You may have different sections which investigate into different aspects of the design. You may also have a separate section for statement of design methodology, modeling, simulations, or experimental methodology as follows:

* **Design details:** Give a clear set of design specifications for the project. The design specifications should be clear concise statements with a specific metric and an appropriate value (See attached IEEE Guide for Developing System Requirements Specifications). Describe your design in as much detail as possible supported by pictures, graphs and drawings.
* **Calculations:** Include all necessary calculations
* **Modeling** (if needed)
* **Simulations** (if needed)
* **Experimental methodology** (if needed)

Chapter 4

RESULTS AND DISCUSSION

**Note:** In this chapter, discuss the project results in detail supported by facts and figures. State the principal results and discuss them. If you have proposed a new idea, algorithm or design, discuss how it compares with existing ones. Tabulate your data and produce necessary plots. Analyze the data and/or plots and make comments. In addition, it is recommended to include following sections in this chapter:

1. **Challenges faced:** Describe all challenges you faced in the project and how they impacted the project schedule, scope or expected results. Also, write about how you solved these challenges or found a way around them.
2. **Cost analysis (if required):** Consider alternative solutions, if have, and perform cost analysis depending on the nature of the project.
3. **Recommendations and Future Work:** In this section, state aspects of the project you have not considered due to lack of time and/or resources. Also, provide suggestions/recommendations for further extensions or improvements.

Chapter 5

CONCLUSIONS

**Note:** In this chapter, provide a brief summary of the significance of your work and the results of the project, what was accomplished, and how well the final design functioned.

**References**

**Note:** For referencing, refer section 1.7 of this document.

**Appendices**

**Note:** Include in the appendices information that could not be included in the formal body of the report because it would disrupt the continuity of the discussion. Background materials, product catalogs, experimental data tables, and extra documentation should be placed in the appendix.

Authors including an appendix section should do so after References section. Multiple appendices should have headings in the style. They will automatically be ordered A, B, C etc. **‘Els-appendixhead’** style is available in this template for the appendices.