MIAE DEPARTMENT

ENGR411

A guide to writing the ENGR411 technical report

Contents

ENGR 411 REPORT FORMAT & TOPIC SELECTION

The ENGR 411 report is a _critical literature survey_.

It should be approximately 20 pages, double spaced, typed using 12 point font with a cover page containing your Name, ID, Department, year and term.

The report submission is accepted only if a signed copy of the Confirmation of Originality form is included.

You can write a literature review on any topic of your choice. Your work must be original and must not have been used in other course work. Your topic must be _specific_ and _technical_. For example, instead of writing on the evolution of gas turbine engines in civil aviation, instead you can write on the advantage of using a turbofan as opposed to a turbojet, and discuss the necessity of cycle optimization to achieve lower specific fuel consumption. This means your report must provide details on how to conduct cycle computations, provide the TS diagram, discuss the equation of specific fuel consumption, etc.

If you are struggling to choose a topic, we suggest that you look through the textbook of your favorite engineering course, find a chapter or topic that was not covered in class, and use this as your initial source of information. This can be your first reference. Next, you can build upon it and conduct more specific literature searches using the Library Resources: https://library.concordia.ca/

The ENGR411 report should consists of the following sections:

1. Cover page
2. Abstract
3. Table of contents
4. List of tables
5. List of figures
6. List of symbols
7. List of Acronyms
8. Introduction
9. Motivations and objectives
10. Literature survey
11. Bibliography
12. Appendices
13. Copy of Topic Approval Form

Below is a description of the major report sections. Please note that the present guide is based on the Form and Style Guide

1. Cover page

The cover page must not include the page number and should look as follows:

Report On

THE EXACT TITLE OF YOUR PAPER

(Title must describe the topic that you have researched)

Submitted to

Receiver's name and title and address complete address,

on Date of completion

By Your name

and title Institution or origin of report

2. Abstract

The abstract is addressed to a technical audience. It is informative and brief. It summarizes the entire report in a few key sentences. In the abstract, you will provide a summary of the following:

- A description of the topic/engineering problem that you have researched
- The findings or the solutions to the problem that you have read about
- Any arguments that are in favor of those solutions
- Your conclusion

It is good practice to review the abstract after the report is completely written. The abstract consists of about 150 words.

3. Introduction

The introduction gives all background information necessary for the reader.

In the introduction, you will:

- Introduce the topic you researched, and give some background information that puts your work into context. Example: if you researched possible ways of aircraft engine noise reduction then introduce the reader to the gas turbine engine, the fundamental principles of operation, the different types of engines, and finally current norms on engine noise. Any theory mentioned or relevant information must be properly referenced.
- Provide a short statement on why it is you've selected this topic example: How does this problem contribute to society? How does this problem impact health, safety, economy?
- Provide a concise description of what you did in this report. What is this research about? What did you do?

4. Motivations and objectives

What are your motivations behind your research? State those motivations based on what you've learned from the literature survey. Then, list the objectives of your research in bullet form. Make sure your objectives are specific.

Example:

The following research aims to:

●Determine the various technologies used for aircraft engine noise reduction

●Investigate the economic impact of the technology in question

5. Literature survey

A good literature survey is key. In order to write this paper you must know what has been done in the literature prior to your work. A good place to start is the Library Resources. Your review must use textbook, conference and journal publications.

In the literature survey, you will:

- Provide a short and specific description of all references you read

- Group your references into themes. Example: 1. Gas turbine engine types, 2. Noise impact on health and safety, 3. Noise reduction strategies implemented in the industry

a. How can you describe a paper critically?

Whenever you are summarizing a paper you have read for the literature survey, make sure you answer questions such as:

- What did the authors do?
- Did they use a commercial software? Did they write code? Did they create engineering drawings? Did they solve differential equations? Be as precise as possible while remaining brief and to the point.
- Why does their work matter?
- How does their work impact, society, economy, state of the art technologies?
- Is the work the authors conducted based on any theory or knowledge you have previously acquired via courses/textbook/internet/papers/in-house material? Can you link them?
- Did the authors reach the results they were expecting? If so, then why not?
- Can their results be improved?
- Could they have reached the results using a better method/procedure/engineering tool?

6. Conclusion and recommendation

In this section, you can make conclusions from what you have learned. The conclusion is simply a brief recap of what you have learned, and recommendations to the topic. Recommendations can be in the form of what future work do you recommend be conducted on the topic? Who should read your paper and why?

7. References (information below is taken from ENCS Form & Style Guide)

Your report must properly reference all your sources clearly. The IEEE Reference Style is the most used style in the fields of engineering.

a. Bibliography Section

The Bibliography section of the report must follow the Conclusion and precede the Appendices. This section consists of a numbered list of all references. All reference entries are preceded by a number in brackets.

Example of Bibliography:

[1] J. Smith, P. White, *Investigating Aircraft Engine Noise*, Engineering Journal, Vol. 23, No. 10 (2018), pp. 1384-1404.

[2] S. Saravanamuttoo, *Gas Turbine Theory*, 7th edition, Pearson, 2017.

The numbers in brackets are cross-referenced to the paraphrased or quoted information within your text.

If you refer to the same reference more than once in your text, you do not need to give it a new number the second time. Instead, you should repeat the first reference number. If the first reference is [7], then the second reference of the same source should also be [7]. Both textual references will correspond to the single reference [7] in your List of References.

b. In-text Referencing

When quoting from or paraphrasing a source within your text, the reference must be indicated by a number in square brackets, such as [2]. This number is then cross-referenced to one of the listed entries in the References section of the report.

Example of Body text:

Chevrons are currently used on aircraft nacelles to reduce jet noise [2].

c. Referencing Quotations

When repeating information from a source word-for-word, the words must be placed within quotation marks. Thus, "the quoted words go here" [the reference number goes here].

d. Referencing Paraphrases of Information

"When repeating information from a source in your own words, the words do not have to be placed within quotation marks. But the information must still be referenced. Thus, paraphrased information goes here [the reference number goes here].

As a general rule, if the information repeated is considered to be in the public domain, there is no need to reference it. For instance, there is no need to reference a source of information for the assertion that water freezes at 0ºC; however, if you were taking information from a journal article about a particular experiment that discussed the freezing properties of certain liquids in porous materials, you should reference that information. It is not in the public domain, but rather comes from one source of information." [1]

e. Referencing Graphics

"When copying graphics from a source, the graphics (figure, table, and chart) need to be referenced just as quotations or paraphrases do. The reference number is placed in square brackets at the end of the caption (for figures) or the heading (for tables). When adapting graphics from another source, the previous requirement for referencing still applies, as this is considered graphic paraphrasing." [1]

f. Additional resources for proper referencing

- ENCS Form & Style Guide, Form and Style Guide
- Concordia Library resource on how to write & cite
- David Kmiec and Bernadette Longo, *The IEEE Guide to Writing in the Engineering and Technical Fields*, 1st ed., John Wiley & Sons, Inc, 2007

ENGR411 REPORT - ADDITIONAL GUIDELINES

1. General guidelines

- Be specific.
- Be brief.
- Do not use slang.
- Maintain your professionalism.
- *Use the passive tense* e.g. It was found… , A code was implemented …, The results obtained demonstrate …
- Use illustrations, figures, tables, drawings, plots, calculations, wherever necessary.
- Add captions to the figures and tables, and cross reference them to text.
- Number your equations.
- Review your report and avoid typographic and grammatical errors.
- Submit your report as a pdf file. Use the following format for the name of the file LastnameFirstName.pdf

2. Plagiarism

The Academic Code of Conduct defines "Plagiarism" as "the presentation of the work of another person, in whatever form, as one's own or without proper acknowledgement" (Article 19a).

Plagiarism implies that you've used (either copy or paraphrase in your own words) material/information/graphics in your report without properly referencing the source. Plagiarism is intellectual theft. Plagiarism is an offence under the University's Academic Code of Conduct. [1]

A list of offences and consequences regarding plagiarism are listed in Academic Code of Conduct or at the following link: http://www.concordia.ca/students/academic-integrity/plagiarism.html

BIBLIOGRAPHY

[1] "Concordia Style and Form Guide," Gina Cody School of Engineering and Computer Science, [Online]. Available: https://www.concordia.ca/content/dam/ginacody/ces/docs/2014FormandStyleGuide.pdf.

[2] "What is Plagiarisim?," Concordia Univeristy, [Online]. Available: http://www.concordia.ca/students/academic-integrity/plagiarism.html.