

## EMBEDDED COMMUNICATING ENGINEERING WORKSHOP 3 *for* COMPUTER ENGINEERING (EPP1)

**NATIONAL UNIVERSITY OF SINGAPORE**



Materials are adapted from *Guidelines for Writing Reports in Engineering* Engineering Faculty, Monash University.

# ENGINEERING INFORMATION REPORTS

## 1. PURPOSE

Such reports are written to present information on a given topic, obtained from your research, observations and informed scientific (engineering) opinion on the topic. Your task may vary from reporting information on a process, operation of a device, to comparing/contrasting between two subjects, and may even include persuading your reader of a better method or solution.

## 2. TARGET READER

This should be targeted at a reader of equal or greater competence than yourself.

## 3. KEY FEATURES

Reports:

- are designed for quick and easy communication of information
- are designed for selective reading
- use sections with numbered headings and subheadings
- use figures and diagrams to convey data.

## 4. STRUCTURING YOUR REPORT

A report usually has these components, though some (bracketed) are optional, depending on the required length:

**Title page**

**Summary**

(Table of Contents)

**Introduction**

**Body - Results/Discussion/Main argument**

**Conclusions**

**References**

(Appendices)

## 4.1. TITLE PAGE

The title page usually contains:

- the course name and number, the department and university
- the title of the report
- the author's name and ID (matriculation) numbers
- the date of submission

## 4.2. SUMMARY

The Summary (about half a page) provides a brief overview of the substance of the report.

The summary

- states the **topic** of the report
- outlines the most important **findings** of your investigation
- states the **key conclusions**.

The summary does NOT

- provide general information
- explain why you are carrying out an investigation
- refer to later diagrams or references.

### Example:

*Summary from a report entitled: Preliminary Design of a Bridge.*

This report presents a design for a bridge to be constructed on the Calder Freeway crossing Slaty Creek in the Shire of Macedon Ranges. Two designs for the bridge were devised and then compared by considering the cost, construction and maintenance of each bridge. Design 1 is a super-T beam bridge while Design 2 is a simple composite I girder bridge. It is concluded that Design 1 is the better design. This design is cheaper, easier to construct, more durable and easier to maintain.

## 4.3. INTRODUCTION

The introduction (about half a page) provides the background information needed for the rest of your report to be understood. It includes:

- a clear statement of the **purpose** of the investigation or research
- the **background** of the topic of your report
- a brief **outline** of the structure of the report if appropriate (not necessary in a short report) .

**Example:**

*Introduction from a report entitled: Preliminary Design of a Bridge, where two alternative designs are presented and evaluated according to the given criteria and the better design selected.*

A dual carriageway bridge with two traffic lanes in each direction is to be constructed on the Calder Freeway crossing Slaty Creek in the Shire of Macedon Ranges in Victoria. The bridge is to span 125 metres between man-made compacted fill embankments, and is approximately 15 metres above the river surface, with a grade of 0.056 m/m.

This report presents two possible concept designs for this bridge. In evaluating these designs, the following criteria are considered: the cost of the bridge, the method of construction, the durability of the bridge and maintenance considerations, the possible disruption to traffic during construction and the aesthetics of the bridge.

The two conceptual designs are presented in the form of sketches of the elevations and cross-sections of the structures.

## 4.4. BODY

The body of the report

- **presents the information** from your research, both real world and theoretical
- **organises information** logically under appropriate headings
- **conveys information** in the most effective way for communication, using:
  - figures and tables
  - bulleted or numbered lists
  - formatting to break up large slabs of text.
- **discusses the significance** of the findings in relation to the **purpose** of the report

### (a) Incorporating figures and tables:

- Refer to each figure and table in the text of the report.  
**Example:** The communication channels in the organization are shown in Diagram 1.
- Give all figures a title.  
**Example:** Table 1 Existing communication channels
- The title of a table goes above the table while the title of a figure **goes below the figure**.
- Figures must be correctly referenced if necessary. Give the source of the diagram or the data if you have taken them from published sources.

### (b) Incorporating equations:

You will often have to include equations in your reports. The conventional style for presenting equations is as follows.

1. Centre the equation on the page.
2. Place the equation number in round brackets at the right-hand margin.
3. In the text of your report, refer to the equation as either Eq. (1) or Equation (1). Use whichever format you choose consistently throughout your report.

**Example:**

The relationship of the speed of propagation and the volumetric tissue fraction is given by:

$$v = \frac{1}{\sqrt{((1-h) K_f^{-1} + h K_t^{-1}) ((1-h) p_f + h p_t)}} \quad (1)$$

We can see from Equation (1) that .....

## 4.5. CONCLUSION

The Conclusion (one or two paragraphs) relates directly back to the aims of the investigation. This section provides an effective ending to your report.

The Conclusion:

- states whether you have achieved the aims of your investigation
- gives a brief summary of the key information in your report
- restates the major findings of your investigation.

**Example:**

*Conclusion from a report entitled: Preliminary Design of a Bridge*

Two designs for the bridge to be constructed on the Calder Freeway across Slaty Creek have been presented and discussed in this report. Design 1 is a super-T beam bridge and Design 2 is a simple composite I girder bridge. Both designs incorporate round piers on piled foundations, which are used because the soil conditions are unknown and possibly unstable. Design 2 has some advantages because it is made of steel and thus has longer spans and fewer piers.

However, Design 1 is clearly the better design. This design requires minimal formwork in the construction of its concrete deck, it is relatively easy to erect and it maintains stability during transportation and construction. In addition, it is cheaper to build and more durable

## 4.6. REFERENCES

The two parts to referencing are:

1. citations in the text of the report
2. a list of references in the final section.

Citations show that information comes from another source. The list of references gives the details of these sources.

You need to use citations in your writing when:

- you incorporate information from other sources: – factual material – graphs and tables of data – pictures and diagrams
- you quote word-for-word from another work.

For example, when you present the theory in the Introduction you must include citations which provide the source of this theory.

### **Example (IEEE system):**

The fluid force (lift and drag) occurs on the surface of a moving or a stationary object placed in a fluid stream [1].

### **Reference:**

- [1] J. K. Munson, "Fluid forces," in Fluid Mechanics, 4th ed. New York City, Cambridge, MA: MIT Press, 1986.

There are two main systems of referencing commonly used in Engineering, the author-date (or **Harvard**) system and the **IEEE** numbering system. In Computer Engineering, you are usually required to use a numbering system called the IEEE referencing system.

You can find details on the IEEE referencing system in the sources provided here:

### **For citing in your work (written text and presentations):**

<http://libguides.murdoch.edu.au/IEEE/text>

### **For the Reference list:**

<http://libguides.nus.edu.sg/c.php?g=145626&p=955413>

## 4.7. APPENDICES

These contain material that is too detailed to include in the main report. • Each appendix must be referred to at the relevant point in the text.

**Example:** The data obtained are summarised below. The detailed data are given in Appendix 3.

