Computer science/mathematics and statistics
work term report guide

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1. About your work term report

Your objective is to write a work term report that successfully communicates technical ideas about your work experience. It will outline how technical information was applied to solve an engineering problem that you were directly involved with or interested in.

Your audience

Your audience is your marker, who will either be a co-op coordinator or a faculty member and your peers. An engineering faculty member, an engineering associate, or a coordinator normally evaluates the work term reports. Employers may not grade reports.

After you hand in your report, your marker may ask you to do some revisions—you must contact your marker to find out if revisions are required.

Write your report at a technical level that is understandable to this audience, i.e. a reader who has an engineering background but who is not familiar with your work. Avoid acronyms and local jargon used at your work place, or include a glossary to help your audience understand.

Report length

Your entire report should normally be about 3,000 words in length, or approximately 12 to 15 pages of double-spaced text in 12 point font, on standard letter size paper with margins not less than one inch.

Report style

Write your report in a formal style and avoid using first person. Sentences such as "I machined five of these cylinders on the lathe" should be expressed as "Five of these cylinders were machined on the lathe".

Writing style, spelling, punctuation and the report format will constitute 30% of your marks. Check your grammar! Some frequently noted errors are:

- incorrect use of it's/its, their/there/they're and we're/were,
- using a singular subject and plural pronoun,
- incorrect use of commas,
- incorrect sentences (for example, missing a noun or a verb),
- inconsistent spelling, and
- inconsistent or incorrect use of capital letters.

2. Choosing a topic

The easiest way to write a coherent report is to have a topic, then develop a central issue about the topic. It’s a good idea to discuss this with your work supervisor and co-op coordinator. Any material presented in the report should be relevant to the central issue. Ideally, a report should tackle an engineering problem you encountered on the work term: provide suitable background, identify the problem, discuss possible solution(s), if applicable discuss how the solution(s) was implemented and what the result was (e.g. did the solution work as desired), and what changes are recommended, if any.

An example of a topic could be the adoption of a new CAD system. Rather than simply including a lot of unconnected information about the system, an issue could be why the change is needed. Any information introduced in the report should relate to why the change is needed. The introduction would include enough information to allow the reader to understand existing
problems (e.g., how the original drawing system works, difficulties when trying to update/access
drawings). The requirements for the new system could then be introduced (e.g., cost savings,
speed, ease of use), then a discussion on which system was chosen and why it was chosen would
follow. Your conclusions could be that the best system was chosen (based on cost, ease of use,
speed, availability, etc.) and you could recommend ways to overcome some of the compromises
made (e.g., purchasing a laser plotter at a later date to reduce up front costs).

By having an issue, the report will follow a logical flow and assist the reader to understand the
issue.

Where possible include numbers and reference material to support your statements. For example,
listing that "adding a colour printer is not feasible due to costs", is not as convincing as including
a table of price quotes from potential suppliers.

**Proprietary reports**

Before you start writing your report, check with your work supervisor about the content of your
report. If it is proprietary (i.e. confidential), then your report will be destroyed or returned to your
employer once it is marked by a UVic marker. You should indicate whether your report is
proprietary on the title page and ask the co-op office to send nondisclosure forms to your work
supervisor.

### 3. What to include

Include the following items in your report:

**1. TITLE PAGE**

The title page announces your report to the reader. As an announcement, it should be descriptive
of the report content and understandable to the general reader. Terminology specific to your
company and uncommon acronyms should be avoided in the title. Your title page must include:

- A report title no longer than 120 characters (a longer title will be truncated on your student
transcripts)
- The company name and location
- Your name, student number, e-mail address, and engineering discipline
- The date you submitted the report.
- **IMPORTANT**: a signature from your employer, confirming whether the report is
confidential or not. Reports submitted without a signature will NOT be accepted!

See the sample title page on page 4.
University of Victoria
Faculty of Engineering
Summer 2010 Work Term Report

Colour Sonar Imaging Tool for Fish Stock Assessment

Institute of Ocean Sciences
Department of Fisheries and Oceans
Government of Canada
Sidney, British Columbia

Stu Dent
0412345
Work Term 2
Electrical Engineering
sdent@uvic.ca

September 4, 2006

In partial fulfillment of the requirements of the
B.Eng. Degree

Supervisor's Approval: To be completed by Co-op Employer

I approve the release of this report to the University of Victoria for evaluation purposes only.

The report is to be considered (select one):  o NOT CONFIDENTIAL  o CONFIDENTIAL

Signature: _______________  Position: _________  Date: _______

Name (print): ___________________  E-Mail: __________  Fax #: _______

If a report is deemed CONFIDENTIAL, a non-disclosure form signed by an evaluator will be faxed to the employer. The report will be destroyed following evaluation. If the report is NOT CONFIDENTIAL, it will be returned to the student following evaluation.
2. ABSTRACT

This should concisely summarize the major points of the main text and the conclusions. The abstract should appear by itself on a separate page and is typically no longer than half a page.

3. REPORT SPECIFICATION

This contains three subsections:

- **Audience** - Describe the intended reader of the report. Normally, your reader should not be envisioned as your co-op coordinator or a university marker, but rather someone who may be moving into your job and would find it useful to read your document, or someone who wants to know what it is like to work in that position, or your supervisor or co-workers.

- **Prerequisites** - Clearly state the knowledge assumed by the reader. For example, are you assuming that the reader can understand any particular programming language or has an understanding of elementary statistics?

- **Purpose** - Describe why you are writing this document. Very briefly state what the report is about, and if, for example, it is an information source for future co-op students, or documentation of the work you accomplished for either your employer or yourself.

4. TABLE OF CONTENTS

A table of contents allows the reader to find the location of a specific section or illustration. It is constructed from the major headings used in the report. Note that the appendices are listed at the bottom of the Table of Contents and that a List of Tables and Figures follows on the subsequent page. Do not list the heading of "Table of Contents" as an item in the table itself. This error is often created by word processing software that creates the table of contents from the header contents of each section.

See the sample table of contents on page 6.
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SUMMARY ............................................................. iii
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5. LIST OF TABLES AND/OR FIGURES (optional)

It may be useful to provide a list of tables and/or figures to help your reader understand your work term report.

Here’s a sample list of tables and figures.

LIST OF TABLES AND FIGURES

FIGURES

<table>
<thead>
<tr>
<th>FIGURES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Sample Title Page…………………3</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Sample Glossary…………………..8</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Sample List of Constants………10</td>
</tr>
</tbody>
</table>

TABLES

<table>
<thead>
<tr>
<th>TABLES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Performance Statistics…………………10</td>
</tr>
</tbody>
</table>

6. GLOSSARY (optional)

If your report contains acronyms or terms that may not be familiar to your audience, it may be a good idea to include a glossary explaining these terms.

The glossary defines specialized technical terminology including acronyms, listing them in alphabetical order, while the list of symbols defines the mathematical symbols used in the report. Any mathematical symbols or constants included in the report should be defined since most mathematical usage is not standardized.

Here’s a sample glossary:

Balanced power system A three phase system with all the voltages equal in magnitude but offset by 120° between phases.

Bus Junction of two or more elements such as lines, loads, generators, or transformers.

Carbon block protector Protection device used on telecommunications cable pairs. If a cable pair conductor comes in contact with an abnormally high voltage, the conductor is short circuited to ground by the protector.

Carson's equation A traditionally used expression for calculating mutual impedance between two conductors.

Fault A power system condition when a phase conductor contacts another conductor or ground. The contact may be direct or through an arc.
Four-wire system  A three phase power system with a neutral conductor.

GPR  Ground potential rise. The difference in voltage of a grounding point to remote ground.

Looped system  A power system where lines form a multipath network between supply and loads.

Radial system  A power system where lines radiate out from a supply to a load. Any load has only one supply path.

Residual current  The net sum of the currents in all phase and neutral conductors at some point in a power system.

Three-wire system  A three phase power system with no neutral conductor.

7. INTRODUCTION

This identifies the subject of the report and states its purpose, significance or objectives. For example, the subject could be the solution to a particular problem, the development, maintenance or testing of some software, the testing of some hypothesis, or the analysis of some procedure.

The relevance of this report to previous or similar work could be discussed. Limitations of the report, such as aspects that will not be described, could be included. The Introduction could briefly describe the company or organization where the work was done, and should include a summary of the organizational structure of the remainder of the report.

8. MAIN TEXT OR BODY

This should contain a clear and informative description of what you accomplished on your work term. Include the approach, methodology, techniques or software used. Discuss any possible alternatives. Present any results and any data or information collected, possibly using tables, illustrations or graphs. Any relevant background theory can be given.

- Emphasize the scientific aspects: what problems did you encounter, what decisions did you make, what were the consequences of these decisions?
- Do not include any non-technical personal experiences (such as social events, issues concerning transportation to and from the work place, or congeniality of co-workers).
- The main body or text should be divided into numbered sections with headings. Emphasize the scientific aspects: what problems did you encounter, what decisions did you make, what were the consequences of these decisions?
- Do not include any non-technical personal experiences (such as social events, issues concerning transportation to and from the work place, or congeniality of co-workers).
- The main body or text should be divided into numbered sections with headings.
9. PERSONAL REFLECTIONS (optional)

If you wish, in this section you can include the personal (nontechnical) aspects of your work term. For example, you could discuss whether or not the work term met your expectations or your learning objectives, details regarding the work environment, or how the job related to your academic program or career objectives.

10. CONCLUSIONS

Conclusions are the results derived from the evidence provided in the discussion. No new material is presented in the conclusion.

When presenting more than one conclusion, state the main conclusion first followed by the others in the order of decreasing importance, to ensure the maximum impact on the reader.

11. ACKNOWLEDGEMENTS

The student's supervisor should be acknowledged, as well as any others who were of help during the work term or who had input to the work term report.

12. APPENDICES

These may include sample calculations, computer programs and/or output, and supplementary illustrations, graphs or tables that provide additional supportive information. Any information appearing in an Appendix must be referred to in the main text of the report.

13. REFERENCES

Any information quoted, paraphrased, or summarized is cited as a reference. Citing references assists the reader by indicating where further information can be found and lends credibility to the analysis within your report. Please note: Wikipedia may be neither an accurate nor authoritative reference source, and should not be cited. "Definition by popular consensus" does not constitute a suitable reference. Instead, use original published source material from reputable established sources.

Any material introduced in the report that is not your original work should be followed by a number, which corresponds, to an item in the List of References. The material cited may be tables or figures from other sources, equations which you did not derive, technical specifications or facts used to support your claims.

Note that each listing includes:

- the name(s) of the author(s).
- the title of the document.
  - For book and journal titles, the title is underlined or italicized.
  - For articles in journals, the title of the article is included in quotations.
- other information.
  - For books, the publisher's name and location, and the year the book was printed.
  - For articles, the name of the journal, the volume number and the date of issue.
For reports, the report number, the name and location of the issuer and the date of issue.

- the page number, when applicable.

When citing a reference within the report, the corresponding reference number may be included in square brackets:

- at the end of a sentence just before the period, eg. [2].
- after figure and title labels, eg. Figure 1: Network Design [3].
- after the appendix title if the entire appendix is copied from another source, eg. Appendix A [4].
- at the right hand margin beside a mathematical equation.

In the list of references, list the cited references in the same order as they are referred to in your report. The reference numbers appear in square brackets at the left-hand margin. General References are listed separately in alphabetical order.

The recommended format is IEEE reference format.

Here’s a sample reference page:

Cited references:

4. Overall format

Page numbering
Except for the title page and letter of transmittal, all pages are numbered. Sections preceding the introduction (Table of Contents, List of Tables and Figures, Summary, and the Glossary) are numbered using lower case roman numerals, i.e. i, ii, iii, iv, etc. Page numbers may be placed at the top middle, top right hand corner, bottom middle or bottom right hand corner of the page. The location of the page numbers should be the same throughout the report to avoid confusion.

Appendices are numbered separately from the rest of the report usually by appendix designation followed by the page number. eg. A-1, A-2, B-1, etc. or I-1, I-2, II-1, etc.

Section numbering
Number sections in the report using a numerals-only system. Headings can either left-justified or indented for each layer.
Headings
Every section in the report has a heading. A heading briefly describes the section that follows and are most often followed by a paragraph rather than another heading. Section and sub-section headings are used in the Table of Contents to assist the reader in locating specific material in the report.

Capitalization
When writing work term reports, covering letters and resumes, try to follow the accepted rules of capitalization. The two most relevant rules are:

*Capitalization of government agencies, companies, departments, divisions, and organizations.*

Capitalize official names and titles. e.g.:
- Air Pollution Control Division
- Crown Publications
- Keen Engineering Ltd.
- Province of British Columbia

Do not capitalize words such as government, federal agency, department, division, administration, group, company, research and development, engineering, and manufacturing when they stand alone. They are only capitalized when they are part of an official name. e.g:

<table>
<thead>
<tr>
<th>Wrong</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a problem for Research and Development, not Engineering.</td>
<td>This is a problem for research and development, not engineering.</td>
</tr>
<tr>
<td>This is a problem for the Research and Development Department, not the Engineering Department.</td>
<td></td>
</tr>
<tr>
<td>Jane Doe is the head of her Division in the Company.</td>
<td>Jane Doe is the head of her division in the company.</td>
</tr>
<tr>
<td></td>
<td>Jane Doe is the head of the Standards Division in ABC Engineering.</td>
</tr>
</tbody>
</table>

*Do not capitalize words to emphasize them.*

Avoid capitalizing words to make them stand out - use *italics* or **bolding** instead. Random capitalization at best detracts from the appearance of your work, and at worst creates the impression that you don't understand basic writing rules.

<table>
<thead>
<tr>
<th>Wrong</th>
<th>Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising and publicity can enhance the Value Package of your product.</td>
<td>Advertising and publicity can enhance the value package of your product.</td>
</tr>
<tr>
<td></td>
<td>Advertising and publicity can enhance the</td>
</tr>
</tbody>
</table>
value package of your product.

Burning is a Chemical Reaction in which Oxygen atoms combine with the atoms of the Substance being burned.

Burning is a chemical reaction in which oxygen atoms combine with the atoms of the substance being burned.

Burning is a chemical reaction in which oxygen atoms combine with the atoms of the substance being burned.

This information was adapted from The Elements of Technical Writing, Gary Blake and Robert W. Bly, MacMillan, pages 59-60.

5. Additional resources

Need help? Contact your co-op office or refer to these books, which are available in the McPherson Library:


