

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: ENVIRONMENTAL PROJECT
CODE NO.: WTR 323-4 SEMESTER: V
PROGRAM: WATER RESOURCES/ENVIRONMENTAL ENGINEERING TECHNOLOGY
AUTHOR: JOHN K. THEIL/MANFRED ENGEL
DATE: NOVEMBER 1992 PREVIOUS OUTLINE DATED: JANUARY 1992

APPROVED: 
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Date: ////^^

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TOTAL CREDIT HOURS: 5 0

PREREQUISITE(S): Successful completion of Semesters I to IV,

I. PHILOSOPHY/GOALS:

This course affords the student the opportunity to develop initiative and self-reliance while working *on* an environmental related project that he/she has personally chosen. The projects may be selected from a wide field which could cover one or more of the following areas:

- (A) Analysis of existing technological problems.
- (B) Creative design.
- (C) Experimental investigations/technical literacy investigations.
- (D) Real-life problems suggested by industry, community at large, and/or innovative ideas of the student, the faculty or other.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Learn effective methods of problem solving on an independent basis.
2. Gain experience in the organization, timing and scheduling of work.
3. Learn the use, selection, etc. of the associated manual skills of simple tools, equipment and materials involved in the project.
4. Develop and/or improve self-confidence via satisfactory achievement.
5. Gain practical experience and technical knowledge in a technological and/or scientific field.
5. Achieve an acceptable level in oral and written communication via oral presentation of the report and written formal report.

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III. TOPICS TO BE COVERED:

General Requirements;

The student will be required to carry out any necessary field investigations, data collection, bench scale model construction, experiments, laboratory testing and literature review. In addition, a high degree of self-motivation, organization, technical ability and communication skills will be expected.

During the course of the project, typed submissions of the following will be required:

TOPIC
OBJECTIVES
PROPOSAL
DRAFT REPORT
FINAL REPORT

Each student will be expected to prepare a schedule for the project in conjunction with the Proposal, and to maintain an up-to-date diary of project activities. The final report is to be bound and submitted in duplicate.

The successful completion of the course includes seminar presentations of the Proposal and the Project by the student. The Proposal Presentation is to include a typed submission of the title page, the objectives and a summary page of the project proposal for distribution prior to the presentation. The time intervals for the proposal and the project presentations will be 10-20 minutes and 20-30 minutes, respectively, followed by questions and discussions.

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Timetable;

The project should be carried out in accordance with the following timetable:

| | |
|-----------------------------|--------------------|
| Topic Submitted | January 28, 19 9 3 |
| Proposal and Plan Submitted | February 18, 199 3 |
| Progress Report | March 25, 1993 |
| Draft Copy Submitted | April 30, 1993 |
| Final Report Submitted | May 14, 19 9 3 |
| Presentation | May 17-28, 1993 |

IV. METHOD OF EVALUATION:

The student will be assessed by letter grade based on the following aspects, weighted on a percentage basis as shown.

| | <u>Weight</u> |
|--|---------------|
| Seminar presentations & attendance | 20% |
| Report - As outlined in the Evaluation of the Technical Report | 80% |

Each of the above aspects of the project must be acceptable to the instructor.

Grading:

| | | | | |
|----|---|----|---|------|
| A+ | = | 90 | - | 100% |
| A | = | 80 | - | 89% |
| B | = | 70 | - | 79% |
| C | = | 60 | - | 59% |

A minimum composite grading of 60% will be required for the successful completion of the course.

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REPORT FORMAT

In general, specific identifiable areas that a Final Format Report should contain are:

THE FRONT PART

Fly leaf, letter of transmittal, title page, synopsis (abstract), table of contents, list of figures (illustrations), list of tables.

(b) **INTRODUCTION**

General introduction to report could contain background knowledge and information, historical information, rationale for project, pertinent important theory (laws, equation, etc...) necessary to do the project.

fc **BODY**

Actual data and/or information verifying the project and directly relates to topic - contains experimental and/or technical data and information, tables, figures, etc...

d) **DISCUSSION**

Interpretation and discussion of technical and/or experimental data and/or information within the body, recommendation, etc...

e) **CONCLUSION**

Basically answers or correlates with introduction and topic, brings out specific points discovered or elucidated from the experimental and/or technical data or information. Generalized statements of important and pertinent facts in regards to the topic, introduction and body can be made.

(f) **APPENDIX**

Necessary but unimportant (extraneous) information can be included here that relates to the topic and is needed for further explanation BUT DOES NOT HAVE TO BE INCLUDED IN THE REPORT.

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BIBLIOGRAPHY

Chronological listings of reference textbooks, periodicals that are used and referred to in the report:. They are listed in order of usage and the proper format must be adhered to.

GENERAL COMMENTS

Writing

The style of a Scientific report is concise. Since the report is normally written after the work is completed, the third person past tense is used most frequently. Any personal pronouns (I, we, you, they, etc.) are avoided. Abbreviations such as temp, and press, are never used, but abbreviations such as °C, mL, g, etc., that are frequently used in scientific calculations, are acceptable. If in doubt, do not use an abbreviation.

The material to be presented should be outlined and then arranged in a logical pattern to fit within the framework of the report format. The body of the work can be divided into sections and subsections as required. The material should be presented such that it leads up to the end section of the report. This lends emphasis to this most important section.

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Typing

In most instances the author of a report will use the services of a stenographer for the typing of the report. It is the responsibility of the author to give the typist sufficient help and directions that the report can be typed with the proper spacing and format. The author should thoroughly check the final typed copy for any errors in spelling, punctuation, grammar, format, etc. All such errors are the fault of the author and not the typist.

The formal layout of the pages are of two basic types as follows:

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MAIN HEADINGS ARE TYPECV1 1/2" FROM TOP OF PAGE

Title should be centered on the first line below the top margin using capital letters only. Never underline or use quotation marks.

The text of the paper begins on the third line, as illustrated above, and is double spaced. All material, except the page number, must be within the margins.

i,

THE ABOVE ILLUSTRATES THE SET UP OF ANY
FIRST PAGE - SYNOPSIS, TABLE OF CONTENTS, NEW CHAPTER,
BIBLIOGRAPHY, ETC.

Never type anything beyond this line with the exception of page number.

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Typing begins on the first line below the top margin, as illustrated here. The page number on every page, using this format, should be placed on the second or third line above the top margin and just inside the right hand margin. The page number is the only thing that may appear outside the margins.

THIS SET UP IS USED FOR THE BODY OF THE REPORT,

Never type anything beyond this line,

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Letter of Transmittal

The author of the report addresses a formal business style letter to the person to whom the report is submitted. The letter states the title of the report and the purpose for submitting the report. The letter of transmittal is always numbered in small Roman Numerals and is page i, however; the page number is never typed on the letter.

Title Page

The title page contains the following information neatly spaced and centred:

- a) SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
- b) SCIENCES & NATURAL RESOURCES DEPARTMENT
- c) Water Resources Engineering Technology
- d) TITLE OF THE REPORT
- 9) Author's Name
- f) Date submitted

Normally (a), (b) and (d) above are typed in capitals only. In addition, the title of the report is underlined. All remaining typing is to be done with capitals and lower case letters.

The title page is page ii of the report and similar to the letter of transmittal, the number is not typed on the page.

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Synopsis

The synopsis is a brief digest of the material contained in the report. It should never be more than one page in length. The function of the synopsis is to tell the reader the contents of the report without requiring the reader to go through the whole report.

The synopsis is page iii of the report and is the first page upon which the number appears. Since this page has a title, the number is placed at the bottom on the page.

Table of Contents

The table of contents is a neatly spaced listing of the parts of the report and their page numbers. This page is numbered in small Roman Numerals at the foot of the page.

List of Illustrations

The list of illustrations is a neatly spaced listing of all figures, illustrations, graphs and the like, that are contained in the report and their respective page numbers. This page is numbered in small Roman Numerals at the foot of the page. If there are no illustrations in the report this page would not be used.

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List of Tables

The list of tables is a neatly spaced listing of all tables used in the report and their respective page numbers. This page is numbered in small Roman Numerals at the foot of the page. If the report contains only a few or no tables this page is omitted. If the tables are numerous or if they contain essential data which might be referred to from time to time, they should be listed.

BODY OF THE REPORT

Introduction

This section is the beginning of the actual report and should lead directly into the topic of the report. The introduction may be as brief as one paragraph or it may cover several pages, depending on the material being presented. The first page of the introduction is page 1 of the report. Since this page has a title, the number is placed at the foot of the page. All subsequent pages are numbered in Arabic numerals to the end of the report.

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Other Sections

The material to be presented in the report is organized into a logical pattern of presentation and is then broken down into a series of headings and subheadings. The actual headings and subheadings used depends on the topic being presented. If required, the material can be divided into further headings, but usually two divisions are sufficient. There may be occasions where three different types of headings clarify the report.

End Section

If one section of the report is to be singled out as the most important it would have to be this one. The title used for the section varies depending on the author and the report. It may be titled Conclusions, Discussion of Results, Recommendations, or even End Section.

It is in this section that the information presented in the report is drawn to a close. Also, this section is used to make recommendations for future work. This section is so vital to the report as a whole that it enhances the report if properly written or it can ruin the report.

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Appendix

As many appendixes as required may be used. Generally they contain information which is related to the report and not required to be part of the main body. Sometimes lengthy lists of data, statistical information and the like that are referred to in the report are placed in an appendix. This allows the reader to go through the report without having to sort through long lists. It is a method by which information can be included in the report while keeping the body of the report concise.

Bibliography

This section is sometimes called "List of References" or "Literature Cited" as it is general practice in scientific papers to list only the works that are specifically referred to in the report. This list is arranged alphabetically by author's surnames and numbered consecutively.

Since the spacing requirements for footnotes lead to typing problems they are seldom used in scientific reports. Most references are made to the bibliography and the number used in the report refer to those in this section.

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References to books should contain the following information in the order given: (see also examples 1 and 2 following)

Author's name, surname followed by initials
Title of book (underlined), edition (if not the first edition)
Publisher and location
Year of publication
Page number

If the reference is to an article the information required is:

Author's name, surname followed by initials
Title of article
Title of publication (underlined)
Volume and publication date
Page number

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Example #1

1. Gould, E.S., Mechanism and Structure in Organic Chemistry, Holt, Rinehart and Winston, New York, (1963)
2. Jones, M.M., Nature, 185, 95 (1959).
3. Ruthven, C.R.J., West-European Symposia on Clinical Chemistry, 2[^], The Clinical Chemistry of Monoamines, ed. by Varley, H., Gowenlock, A.H., 39-47, Elsevier Publishing Company, Amsterdam (1963).
4. Carrol, J.E., Masters Thesis, University of Windsor (1969).

Example #2

1. Johnson, T.P., Part I: How Well Do You Inform?, Chemical Engineering, March 14, 1966.
2. Johnson, T.P., Organize the Report for Fast Writing, Easy Reading, Chemical Engineering, June 30, 1969, p. 104-10.
3. Turabian, K.L., A Manual For Writers, 4th ed., University of Chicago Press, Chicago, 1973.
4. Vinci, V., Ten Report Writing Pitfalls: How to Avoid Them, Chemical Engineering, December 22, 1975, p. 45-8.

• STUDENT NAME

STUDENT NUMBER:

Evaluation of the Environmental Project

The "Report" is part of the requirement to successfully complete the program of study in the Water Resources Engineering Technology or Environmental Engineering Technology programs at Sault College of Applied Arts and Technology. The factors in the list which follows are judged objectively from the evidence provided by the student as the process involving the writing of a technical report proceeds. Qualitative values are changed to numerical values according to the schedule shown next.

1. No improvement needed
2. Little improvement needed
3. Some improvement needed
4. Major improvement needed
5. Not applicable

Section A - Pre-writina Activities 15%

Did the student

Review course outline and the evaluation criteria
Develop list of 12 possible topics
Research and narrow list of three topics
Write a practice proposal and plan
Prepare and submit final TR proposal and plan

TOTAL

Section B - Status Report Activities 10%

5. Has project plan been followed
7. Have status reports been provided
8. Was draft copy presented on time
9. Was revision completed on time
10. Was final copy presented on time

TOTAL

Section C - Technical Merit 40%

- 11 Is the project worthy of a technologist
- 12 Is there good depth of research
- 13 Does the TR increase student's knowledge
Is the scope broad enough
Does the student understand his/her research
Does the work relate to a worthwhile application
- 1b Is there evidence of creativity
- 19 Is there engineering precision in detail (units)
Has the student grown professionally

SUBTOTAL

Section C cont'd

If the report is based upon Laboratory/Equipment Activity

- 20. Has a journal been maintained
 - 21. Has work required much instructor intervention
 - 22. Was student persistent in overcoming problems
- TOTAL

Section D - Qualities of the Report 10%

- 23. Is the report self-sufficient
- 24. Is interest maintained
- 25. Are explanations clear and thorough
- 26. Is "filler" avoided
- 27. Are opinions supported by fact

Section E - Elements of Technical Reports 10%

Quality and use of

- 28. Letter of transmittal
 - 29. Title page
 - 30. Table of Contents/Figures
 - 31. Abstract/Summary
 - 32. Introduction
 - 33. Body of the report
 - 34. Conclusions/Recommendations
 - 35. Appendices
- TOTAL

Section F - Style 5%

- 35. Maintenance of unity and coherence
 - 37. Sentence length and variety
 - 38. Directness, simplicity and precision
 - 39. Avoidance of unnecessary repetition
- TOTAL

Section G - Mechanics of Writing and Documentation 10%

- 40. Proper Flow Charts and Graphs
 - 41. Acknowledgments
 - 42. Alphabetical listing of references
 - 43. Use of footnotes and endnotes
 - 44. Effective use of diagrams and photos
- TOTAL

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SUMMARY

| | No . of Fac:tors | Factor Sum | Factor Average | Section Worth | Section mark wt. X worth |
|-----------|---------------------|---------------|-------------------|------------------|-----------------------------|
| Section A | 5 | | | 15% | |
| Section B | 9 | | | 10% | |
| Section C | 9/12 | | | 40% | |
| Section D | 5 | | | 10% | |
| Section E | 8 | | | 10% | |
| Section F | 4 | | | 5% | |
| Section G | 5 | | | 10% | |

GRAND TOTAL

1.0 2.0 3.0

A A- B+ B B- C+ C C- R

Final Grade

Svaluator _

Student