

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE MARIE, ON



COURSE OUTLINE

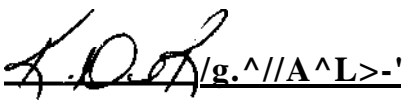

Course Titles ENVIRONMENTAL PROJECT

Code No.: WTR 323-4 Semesters SIX

Programs WATER RESOURCES/ENVIRONMENTAL
ENGINEERING TECHNOLOGY

Authors SUBHASH VERMA

Dates NOV. 1997 Previous Outline Dates NOV. 1992

Approveds 
Dean 
Date

Total Credits 4 Prerequisite(s)
Length of Courses 16 Weeks Total Credit Hours 60

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For additional information, please contact Kitty DeRosario, Dean, School of Trades
& Technology, (705) 759-2554, Ext. 642.

I. COURSE DESCRIPTION:

The purpose of this course is to allow the student to explore, in more depth, a technological project that he/she has personally chose, related to his/her work experience or course work. This is achieved by undertaking a suitable project, developing and analyzing appropriate data, preparing a comprehensive report on the project's work and its interpretation, and presenting the results in one or more seminars.

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 others.**

n. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

The overall educational objective of this course is that the student can demonstrate the ability to research and carry out a suitable technical project, to present this in one or more seminars, and to report it in an acceptable written format.

Upon successful completion of this course the student will demonstrate the ability to;

- 1) Focus on a specific technical problem and develop an appropriate hypothesis.

Potential Elements of the Performance:

- Select a technical problem
- Perform literature search and review
- State the objectives of the study
- Select appropriate methods to conduct the study
- Prepare a synopsis of the proposal
- Make an oral presentation on the proposal

**n. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE
(Continued)**

- 2) Carry out a review of the literature relative to the chosen problem.

Potential Elements of the Performance:

- Present a list of texts, technical journal articles, conversations, etc. to illustrate review was carried out
- Perform literature search
- Summarize the relevant information
- Prepare bibliography

- 3) Demonstrate effective methods of problem solving on an independent basis.

Potential Elements of the Performance:

- Key objectives of the study
- Select appropriate methods

- 4) Design and carry out the research work associated with the project in an organized and timely fashion.

Potential Elements of the Performance:

- Submit plan of research with target dates for completion of various phases and progress reports as required

- 5) Analyze collected data and draw appropriate conclusions from them.

Potential Elements of the Performance:

- Submit collected/tabulated data in written report
- Submit conclusions resulting from research in written report
- Summarize the results in tabular and graphical form
- Discussion of results
- Reference to the results
- Numbering and titling of tables and graphs

**n. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE
(Continued)**

- 6) Prepare a finished written report using an acceptable format.

Potential Elements of the Performance:

- Rough draft; of the report
- Structure of the report
- Editing of the report

- 7) Demonstrate an acceptable level of oral communication while presenting the report in a seminar.

Potential Elements of the Performance:

- Present report in a seminar to class where mannerisms, voice, diction etc. will be evaluated
- Use of overheads
- Questions and discussion

m. TOPICS:

1) 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:

SYNOPSIS OF 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 journal 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, list of objectives and methodology of the project proposal for distribution prior to the presentation. The time intervals for the proposal and the project presentations will be 10-25 minutes and 20-30 minutes, respectively, followed by questions and discussions.

2) **Timetable:**

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

Proposals submitted to Faculty Advisor	5* week of semester V
Presentation of proposal in seminar	2 nd week of semester VI
Progress Reports	as directed by faculty
First draft of report	10 th week of semester VI
Final report submitted	12 th week of semester VI
Presentation	12 th & 13* week of semester VI

Students will be advised of actual dates each year by faculty.

3) **Report Format:**

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

fa) THE FRONT PAGE

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

(i) **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.

(ii) Title Page

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

- a) SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY
- b) SCHOOL OF TRADES & TECHNOLOGY STUDIES
- c) Water Resources or Pulp & Paper or Environmental Engineering Technology
- d) TITLE OF THE REPORT
- e) 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.

(iii) Abstract

The abstract 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 abstract is to tell the reader the contents of the report without requiring the reader to go through the whole report.

The abstract 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 of the page.

(iv) 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.

(v) 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.

(vi) 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.

(b) THE BODY OF THE REPORT

This is the main part of the report and is broken down into such sub sections as introduction, background or definition of problem, review of literature, materials and methods, results and discussion, conclusions and recommendations.

It is impossible to impose rigid headings for the main part of the report as it will be necessary to vary heading depending upon the nature of the project selected and the results. Nevertheless, these sections will be appropriate to most reports and are listed and explained here as a guide to students. If required, students may use other headings or additional headings.

(i) 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.

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

(ii) Definition of Problem

Somewhat self-explanatory and may be covered adequately in the introduction. Some people prefer to discuss this detail in a separate section.

(iii) Review of Literature

This section includes the work done by other authors. Each work is properly referenced and is laid out in chronological order. The most common method is to include the number of the reference from the reference section.

(iv) Materials and Methods

A thorough description of the equipment, apparatus and methods used to collect the data is made in this section. Any deviation or modifications to the standard method is highlighted. The method should be adequately described with the use of illustrations even if the data is collected by some other agency.

However, students must realize that this report is not to be like a college laboratory manual. You are not giving instructions on how to do a procedure; you are describing what was done. The two formats are distinctly different.

(v) Results and Discussion

Present results and discuss in light of research methods used, the quality, pattern, etc. Also discuss results in terms of interpretation and relationship to objectives or hypotheses. Where it will help your discussion, use tables or figures and include them as close as possible to the first reference to this information. However, do not include tables or figures if you are not going to discuss the information they contain.

(vi) 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 import and pertinent facts in regards to the topic, introduction and body can be made.

(vii) Recommendations

Very often your work will lead to recommendations for raw material procedure or process equipment changes. If appropriate, be sure to list all recommendations with a few lines on why they are appropriate. Some recommendations could be for further study. If so be sure to indicate what, or in which directions, you think this work should go.

In these last two sections, the information presented in the report is drawn to a close. This area is vital to the report and can enhance a weak research project or ruin a strong project. Take care to give this the thought it deserves.

c) THE SUPPLEMENTARY SECTIONS

Supplementary sections such as appendices and bibliography are necessary but do not belong in the body of the report.

(i) Appendix

Raw experimental data and/or supporting 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.

As many appendixes are required may be used. 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.

(ii) 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.

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

Author's name, surname followed by initials
Year of publication (in parenthesis)
Title of book (underlined), edition (if not the first edition)
Location
Publisher

If the reference is to a magazine article the information required is:

Author's name, surname followed by initials
 Year and volume or month
 Title of article
 Title of publication (underlined)
 Page numbers

Examples (all examples are false):

Reference to a Book

Jones, R. (1988). Managers Like to take vacations. New York. MacLeod-Hall.

Reference to a Magazine

Crocker, O. (1987, December). Quality circles. Quality Magazine, pp. 34-35

Reference to an Unpublished Paper

Goodstudent, J. (1997, October). Energy and your paper. Paper presented at the meeting of Good Students. Sault Ste. Marie, ON

Reference to Non-print Source

MacEwan, N. (1997). How to make a video training program that works (Film). Sault Ste. Marie, ON: MacEwan Video Works.

Reference to Source not Readily Available

How to Finish first. (1980). (Available from [Quantum Leaps]), Ann Arbor, MI.

Reference to an Interview

Dunn, P. (1987, January). Interview with R. Smith. President of M. G. J. Automotive Booklet, pp. 45-48.

d) GENERAL COMMENTS**(i) 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.

(ii) 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.

When writing equation use the equation editor, if possible. Be careful of equation formats and write equations by hand if necessary.

rv. REQUIRED RESOURCES/TEXTS/MATERIALS:

There is no textbook for this course. Access to word processing facilities (or typing) is a requirement for the final report.

Additional Resource Materials Available In the College Library:

Use of all relevant texts, reference books, journal articles is required. In addition, faculty members may make private materials available to students.

EVALUATION PROCESS/GRADING SYSTEM

Grading will be based on the student's performance in one or more seminars (presentation, attendance and participation) as well as on the preparation of the final report. Seminars will be worth 30% of the final mark (20% for presentation and 10% for attendance and participation) with the report being worth 70%. The Report will be evaluated in terms of technical content, structure, graphics, interpretation of data and on its merits as a written report. This means that your writing skills will be fully evaluated. The co-op work term report evaluation sheet may be used as a suitable guide.

Weighting will be as shown:

Seminar - Presentations	20%	
Seminar - Attendance & Participation	10%	30%
Report - Graphics	10%	
Structure	20%	
Literary Quality	15%	70%
Technical Quality	25%	
TOTAL	100%	

Letter grades will be assigned as follows:

A+	= 90 - 100%
A	= 80 - 89%
B	= 70 - 79%
C	= 59 - 69%
R	= -59%

Students having a final grade of "R" will have to repeat the course in order to obtain credit. There are no supplemental tests for this course.

ENVIRONMENTAL PROJECT

WTR 323-4

COURSE NAME

COURSE NUMBER

VI. SPECIAL NOTES:

Special Needs

If you are a student with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

- Retention of Course Outlines
It is the responsibility of the student to retain all course outlines for possible fixture use in acquiring advanced standing at other post-secondary institution
- Substitute Course Information is available at the Registrar's Office.
- Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.