

# DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

## WKEXP 906

### RESEARCH INTERNSHIP – BIOMEDICAL OPTION

WKEXP 906 is a four-month research or development internship for engineering students registered in the Bio-medical Option in either Chemical or Materials engineering. This work experience will provide students with personal involvement in the practice of the biomedical engineering discipline.

1. Students may register for WKEXP 906 after the completion of Term 4; internships will take place over a four month period (Fall, Winter or Spring/Summer). No academic courses are to be taken during this work term without permission of the Biomedical advisor, Dr. Larry D. Unsworth (P.Eng).
2. Registration in WKEXP 906 must be done by Heather Green. A completed **Biomedical Research Internship Registration Form** (next page), signed by the project supervisor and course coordinator, must be handed in before you can be registered in WKEXP 906.
3. Upon completion of your internship you are required to submit a technical report. The report must have a biological or biomedical component where the implication of the work on health care or biomedical industry is explained. *See the attached Report Guidelines.*
4. Deadline for WKEXP 906 report submission will be as follows, unless that date falls on a weekend or holiday, then all reports are due on the next business day:

Fall Term	December 20, 2013 or the next business day
Winter Term	April 28, 2014 or the next business day
Spring/Summer	August 15, 2013 or the next business day

All reports must be submitted to Heather Green, W7-002 ECERF

Deadlines will be strictly enforced; late reports will be penalized 10% per working day unless arrangements have previously been made with the course coordinator.

Dr. Larry D. Unsworth (P.Eng),  
Biomedical Advisor and Course Coordinator

**DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING**

**WKEXP 906 BIO-MEDICAL INTERNSHIP REGISTRATION FORM**

**Term in which project is to be completed:**

**Fall Term (Sept-Dec)**

**Winter Term (Jan-April)**

**Spr/Sum Term (May-Aug)**

**NAME OF STUDENT:** \_\_\_\_\_

(Please Print)

**Student ID Number:** \_\_\_\_\_

**Title of Project:** \_\_\_\_\_

**Location of Internship:** \_\_\_\_\_

**Signature of Student:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Company Name or University Department:** \_\_\_\_\_

**Printed name of Supervisor:** \_\_\_\_\_

**Signature of Supervisor:** \_\_\_\_\_

**Signature of Course Coordinator:** \_\_\_\_\_

Dr. Larry D. Unsworth, P.Eng, Coordinator

# Report Guidelines

## 1. OVERALL GUIDELINES

- a. Your report must **not** simply be an account of what you did on your work term. It must contain an identifiable analytical component and should display some technical evaluation. Reports without critical analysis (such as descriptions of processes, systems or existing mathematical models) are unacceptable. Documents such as user guides are equally unacceptable.
- b. The report must have a biological or biomedical component where the implication of the work on health care or biomedical industry is explained. If the internship work directly involved biological or medical research, scientific and technical discussion of the results are expected. If the absence of such an involvement, the implications of the work on biomedical industry or clinical practice must be discussed.
- c. If the report contains confidential information, which the employer does not want released, the report may be graded by your supervisor or an engineer within the employer's organization: pending approval of the Biomedical Advisor. In such cases, the evaluator should use the attached evaluation form and return it to the Chemical and Materials Department.

### **Submit to:**

Dr. Larry D. Unsworth (P.Eng), Biomedical Advisor  
Department of Chemical and Materials Engineering  
ECERF 7-070D  
9107 – 116 Street  
Edmonton AB T6G 2V4

- d. Examples of acceptable technical reports include feasibility studies; studies of the effectiveness of alternative solutions to an engineering problem is proposed and implemented. All these types of reports contain the essential elements of problem definition and analysis. As well, they demand that you display some evaluative skills with respect to engineering solutions.
- e. Overall report format is:  
Font: 12 pt., Times New Roman  
Spacing: Double  
Margins: 1 in. all around

## 2. **FORMAT GUIDELINES**

Organize your report into these sections:

- Preliminary pages
- Abstract (or summary)
- Main section
- Conclusions and recommendations
- References
- Glossary and nomenclature (optional)
- Appendix (optional)

### **PRELIMINARY PAGES:**

The first parts of the report are called the “Preliminary Pages” and must be organized in the following sequence:

- Front cover
- Title page
- Letter of submittal
- Statement of confidentiality (where required)

Since the preliminary pages are at the beginning of the report, they should be of a quality that creates a good impression for the reader.

### **FRONT COVER:**

The front cover must list:

- the title of the report
- your name and department
- your current work term

### **TITLE PAGE:**

Select a title which provides the reader with some indication of the report topic and content. The title page lists the following information:

- University of Alberta
- Faculty of Engineering
- Title of Report
- Name and Location of your Employer
- Your name and current work term
- Completion date of the report

**LETTER OF SUBMITTAL:**

The letter of submittal must follow the format of a standard business letter. Address your letter to your marker. Use either your employers letterhead or use your home return address on plain paper.

Your letter must contain the following information:

- Name of employer
- Report title
- Current work term
- Name(s) of supervisor(s)
- Department(s) in which you worked
- Main activity of employer and department
- Purpose of report (from the point of view of your work project)
- Acknowledgement of assistance and your role in the work described in the report. Did you do all of the reported work yourself? If you were a member of a project team how many people on the team and what was your specific contribution?
- Your name, student ID and signature

**ABSTRACT: (Or Summary)**

The abstract is a short, self-contained paragraph usually about 200 words long at the beginning of your report. It is a synopsis of information contained in the report and should state the problem and give a summary of your main discoveries and conclusions. A sample abstract is shown in the Appendix.

**MAIN SECTION:****INTRODUCTION:**

The introduction is always the first section in the body of your report. It sets the stage for the presentation of your work and specifically states what the problem or project was that you worked on. It should supply enough background information to help the reader understand why your report was written and how it relates to any similar work done previously. If you have written the report for your employer, mention this in the introduction.

**THE REST OF THE MAIN SECTION:**

You have stated the problem (or project) in the introduction. The main section should explain how you studied this problem, what your findings were, and what these findings mean. Organize the report into sections. Use a clear and consistent system of headings. You may be able to follow the commonly used system of “Materials and Methods”, “Results”, “Discussion/Conclusions” with appropriate subheadings.

**FIGURES:**

Figures include line drawings (diagrams, histograms, graphs) and photographs. They should be used to illustrate aspects of your data that are too complex to portray in words.

**CONCLUSIONS AND RECOMMENDATIONS:**

The conclusions provide a short summary of what you did and what it means. Make any statements here that you can derive from the investigation and that can be supported by the analyses described in the report. Do not go into detail about the methods you employed.

If recommendations come out of your work, emphasize them in the conclusions. Some of your recommendations may be speculative, but most should follow logically from the conclusions.

**REFERENCES:**

This section can also be named “Literature Cited” or “Bibliography” according to the preference in your discipline. List all publications referred to in the main text. Follow the standard for listing accepted by your Faculty or adopt a style used in journals in your research area.

**GLOSSARY:**

Add a glossary only if the text is necessarily heavy with specialized terms, mathematical symbols or technical jargon. If you have only the occasional term in your report, define it as part of the text.

“...that pressure (P) is a function of temperature (T)...”

“...the snout area contains a pair of nasolabial grooves (NLG: Fig 4C)...”

**APPENDIX:**

The appendix should contain information that substantiates the report but that is now required for a convincing understanding of your work. The appendix may contain bulky data such as lengthy tables, computer print-outs, descriptions of processes or operations, maps, and so on. Assign consecutive letters or numbers to each, for example “Appendix A”, “Appendix B”, or “Appendix 1”, “Appendix 2”. Not all reports have or need an appendix.

## WORK TERM 906 TECHNICAL REPORT EVALUATION FORM

Department of Chemical and Materials Engineering  
 Dr. Larry D. Unsworth (P.Eng), Biomedical Advisor  
 W7-002 ECERF  
 University of Alberta  
 Edmonton AB T6G 2V4  
 Telephone (780) 492-3321 Fax (780) 492-2881

Work term in which report written: Year 20\_\_\_\_\_ Sept-Dec \_\_\_\_\_ Jan-Apr \_\_\_\_\_ May-Aug \_\_\_\_\_

Student Name \_\_\_\_\_ ID \_\_\_\_\_

Employers Name \_\_\_\_\_

Topic of Report \_\_\_\_\_

Evaluated By \_\_\_\_\_

FORMAT (Please Check)	Excellent	Above Average	Satisfactory	Needs Improvement	Unsatisfactory
Typed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Double Spaced	<input type="checkbox"/> Yes	<input type="checkbox"/> No			

STRUCTURE (Please Check)	Excellent	Above Average	Satisfactory	Needs Improvement	Unsatisfactory
Introduction	<input type="checkbox"/>				
Background and Objectives	<input type="checkbox"/>				
Organization of Content	<input type="checkbox"/>				
Conclusions and Recommendations	<input type="checkbox"/>				

LITERARY QUALITY (Please Check)	Excellent	Above Average	Satisfactory	Needs Improvement	Unsatisfactory
Grammar	<input type="checkbox"/>				
Spelling	<input type="checkbox"/>				
Clarity	<input type="checkbox"/>				
Style	<input type="checkbox"/>				

QUALITY OF SUBJECT MATTER	Excellent	Above Average	Satisfactory	Needs Improvement	Unsatisfactory
Suitability of Topic	<input type="checkbox"/>				
Command of Topic	<input type="checkbox"/>				
Analytic Content	<input type="checkbox"/>				
Thoroughness of Treatment	<input type="checkbox"/>				
Quality of Treatment	<input type="checkbox"/>				

OVERALL EVALUATION	Excellent	Above Average	Satisfactory	Needs Improvement	Unsatisfactory
	<input type="checkbox"/>				

Would you recommend this report be shown at employer interview  Yes  No

**Comments – Please see attached separate page**

**Evaluator's Signature** \_\_\_\_\_

(If evaluated by an employer, this signature will verify that the employer prefers not to release the contents of this report)

**Comments: Please provide your brief summary of students report.**

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**Supervisor Signature**

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**Date**