DEPARTMENT OF ENGINEERING SCIENCE

FOURTH YEAR PROJECTS 2020

(ENGSCI700A/B)

INSTRUCTIONS AND GUIDELINES

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1. Overview

This document contains information on report submission, oral presentations and assessment procedures for the ENGSCI700 (A/B) paper (known more commonly as the Part IV Project), as well as (what is hoped are) some useful advice. Please see the Canvas Syllabus page for important project dates.

Formally, the BE(Hons) Degree requires that you submit a report on project work carried out under the supervision of a staff member. It is a 30 point course with the final completion date set somewhat earlier than the end of the second semester so that preparation and presentation of the project report does not interfere too much with your preparation for the final examinations.

The project gives you the opportunity to do an extended piece of independent work, using the skills and knowledge acquired in your course so far, and allows you to experience independent learning for a reasonably-sized open-ended problem, as opposed to the smaller scale problems considered in lectures and assignments. That process includes the gathering of data and information, the development, design and\or application of techniques for problem solution, and the interpretation of the outcomes.

Projects will differ according to topic; some will be strongly analytical, others will be more computational, perhaps involving computer modelling or design. A project may include experimental and/or field work, but lengthy data collection or extensive outside involvement is not encouraged.

Your project will be in collaboration with a project partner. However, your Project Portfolios (see Section 2) will be assessed individually. Therefore it is important to clearly identify from an early stage your individual roles and responsibilities in the project, as well as division of labour, and collect evidence of your individual contributions in a way that can be included in your portfolios.

a) Workload

As a guide in terms of hours, we expect that each student will spend a total of approximately 200 hours working on the project, which equates to approximately 8 hours per week. The size of the project must be kept in perspective. Although most students find the work to be exciting and stimulating, and sometimes prefer to work on it at every spare moment, remember that this subject is worth only about one-fourth of the whole final-year load.

b) Progress

You should work steadily on the project, throughout the year, assigning it a due proportion of your time. You must keep in close contact with your supervisor. It is your responsibility to keep your supervisor informed of your progress and you can expect your supervisor to keep you going with ideas and advice. Your supervisor will expect to meet with you every week. It is intended and hoped that your topic will be reasonably clear from the beginning. However, sometimes the emphasis or direction will change slightly as the investigation proceeds. Such changes should, nevertheless, be minor.

A diary recording your work chronologically should be kept for your project, which can be submitted as part of your Research Compendium (see Section 2). You will also find a well kept diary a useful tool when you are writing your report.

c) Project Dinner and Prize-Giving

The project dinner will take place the week of the final oral presentations, and will include project prize-giving. The Department covers the cost of the meal for all Part IV students.

2. Mid-Term Deliverables

2.1 Project Scope, Research Objectives and Literature Review

The literature survey will describe existing studies and literature that are relevant to your project. This will usually include sufficient basic background so that someone unfamiliar with the area can grasp the context of the problem, the issues that your project intends to address, and hence the overall motivation behind your project. An exploration of the research conducted to-date on the problem of interest will then usually follow, including references to the scholarly literature in this area. This survey should demonstrate that you are familiar with the broader context in which your particular piece of research sits, and the gaps in knowledge that you are intending to address in your research.

The Project Scope and Research Objectives will then lay out precisely the research question(s) that you intend to answer in your project, and the methodologies you will use to achieve this objective. This would not usually exceed one page.

In total, the Project Scope, Research Objectives and Literature Review document should **NOT EXCEED 5 PAGES**.

2.2 Mid-Term Report

The mid-term report should be 4-6 pages long. Its precise contents will inevitably depend upon the nature and scope of the project, but should not repeat information already contained in the Project Scope, Research Objectives and Literature Review document (see Section 2.1 above). The purpose of this document is to give you the opportunity to get some feedback on your technical writing, and as a status check on the progress you have made up to this point.

2.3 Preliminary Oral Presentations

These are intended to show progress in the project during Semester 1. In particular, you should outline the problem or application and the solution approach you are using.

The pair talks should be no more than **10 minutes** with **3 minutes** for questions, and individual talks **5 minutes** with **2 minutes** for questions. Upload instructions will be forwarded closer to the date.

This presentation will not be taken into account for the final assessment, however, it does give you an important opportunity to practice and receive feedback.

3. Assessment

Each student individually will submit a final Project Report, which will be assessed by an Examiner and Assessor, who may use the Oral Presentation and materials in the Compendium to inform their decisions.

3.1 Final Report

The report (excluding appendices) should **NOT EXCEED 35 PAGES** from Introduction to Conclusions, (i.e. excluding front matter, back matter and appendices.) with font **TIMES NEW ROMAN 12pt** (or similarly-sized font)**.**

Reports exceeding this length will be penalised at **ONE PERCENTAGE POINT PER EXCESS PAGE**.

The assessment will cover all aspects of the report including its clarity and understanding, but will especially concentrate on the technical content, including background and statement of the problem, formulation, mathematical model, analysis, results (presentation and validity), conclusions, application to the original physical situation, comparison with related problems and other solutions, difficulty of the problem and how well it has been tackled.

The report will also contain an expanded version of the Literature Review and Project Scope description submitted earlier in the year (See Section 2.1).

a) **Scope**

The report should be intelligible to readers who are technically proficient, but not necessarily experts, in the field. It should clearly present a brief recap of the problem (the bulk of the background will be contained in your Literature Survey), an explanation of the methods used and the results and conclusions together with a critical assessment of their significance. It should contain all appropriate supporting material or references and a list of symbols used.

Secondary information, e.g. raw data, computer programs, etc. might be better located in the Research Compendium, unless absolutely essential to the report's narrative.

b) **Content**

A typical report might contain the following (with each beginning on a new page):

Completed Declaration of Contribution Form, Title page, Abstract, Acknowledgements (if any), Table of contents, Notation list (list of symbols used with brief definitions), Brief Introduction, Literature Review, Methods, Results, Discussion, Summary and Conclusions, Appendices, References

Please note that the above is just a suggested structure, rather than rigid requirement.

Some general pointers:

i) **Introduction:** At an appropriate point in the introduction a clear statement should be made of what is background theory and what is original work. All material which is not original must be referenced.

ii) **References:** References to previous works should be made in a consistent way. Specific references should be itemised in the Reference list, with any other more general material listed in a Bibliography. Only those books and papers actually consulted should be included. There are several variations on layout of reference lists; obtain advice from your supervisor and the library staff.

iii) **Numbering:** Numbering of sections, equations, figures and tables should be clear and consistent throughout the report. If you are using an automatic referencing facility in MS Word, be on the lookout for any broken links during the final proof reading of your report.

iv) **Writing Style:** Layout, English style, grammar and spelling have considerable effect on those assessing the reports - pay attention to these, for instance, use a dictionary where necessary. Your use of English, the organisation of your material, and the clarity of the explanations are important for the understanding of your project report. It is best to be short and concise throughout, and remember to define important terms when they are introduced.

v) **Figures:** Graphs, photographs, diagrams and tables should be placed as close as possible to their references in the text. Also, each figure and table should have a caption giving a brief description. All parameters (and units) should be clearly shown in line drawings. Make good use of legends for diagrams where more than two or three parameters are used. Also be sure to properly acknowledge and source any third party images that you include.

Do not include an abundance of computer drawn figures if they do not add to the argument. Figures or tables which are "side-on" must be placed with their bottom edge to the right-hand (outside) edge of the page.

Hand-drawn graphs, diagrams and tables should be drafted in black ink in order that reproduction is satisfactory.

vi) **Computer Code\Output**: In most cases, this would be better placed in the Research Compendium, unless absolutely necessary to an understanding of the report.

c) **Plagiarism**

Failing to reference material that is not your own work (including figures and images, formula, passages of text etc.') is considered a serious matter. Project Portfolios will be submitted to the online tool Turnitin.com, to check for similarities with other unreferenced material.

d) **Submission**

You must upload one electronic copy of your interim and final reports in either MS Word or PDF format to Canvas, which will automatically run the uploaded material through TurnItIn. Upload instructions will be forwarded closer to the date.

Notes:

- It is recommended that you uploaded files from a good internet connection, to avoid any network timeout problems.
- The time of the most recent upload will be taken when deciding any lateness penalties

e) **Time Management**

Time spent in achieving a perfectly word-processed report is unlikely to be rewarded with an increase in marks. Time spent on writing an excellent, clear, concise, logical, well-argued report with correct grammar and spelling, however, is likely to be rewarded by better marks. You need to remember that the project counts for only one fourth of the year's work, so you must ensure that your time input to the report preparation does not jeopardise your performance in other papers.

3.2 Research Compendium

The purpose of the Research Compendium is to provide more details on the work actually performed during the project, to support the information provided in the report, and inform that examiner and assessor on the soundness of the methods employed.

Each compendium needs to be prefaced with a document that discusses the contents and their relationship to the work presented in the report. This should also include statements around individual vs pair

contributions, and the level of investment required in the resources used, e.g. whether code\data was written\gathered by you personally, or sourced from a third party.

The exact contents of the compendium will likely vary from project-to-project, but could include items such as working files e.g. code or CAD files, simulation data, laboratory books, project diary, correspondence, notes from meetings with supervisors, oral presentation files.

We would therefore strongly recommend that you keep a workbook as a way of logging your project work, and also take notes in your weekly meetings with supervisors. Both can then be included in your compendium.

Please Note: The Compendium should not be confused with a research\data repository. It is not necessary to submit every file associated with the project, only those that are likely to be useful in assessing your portfolio. Please also question whether your staff will likely have access to the software required to access any files included in the Compendium.

2.4 Final Oral Presentations

Pair project talks will be of no more than 20 minutes followed by 5 minutes of questions. For individual projects, the talks will be up to 12 minutes with 3 minutes of questions. When designing your presentation, you should consider:

- Style of presentation (fluency, clarity, use of aids)
- Interest (both displayed by the speaker and generated in listeners)
- Organisation of material to fit into restricted time (description of problem, solution, results)
- The ability to field questions and discuss the material

An oral presentation differs markedly from a written presentation. Do not simply read the written project but concentrate on communicating the main ideas. You should have a run-through before the actual presentation days, perhaps with a sympathetic but critical friend as audience.

The Department will award prizes for the best Biomedical Engineering and Engineering Science oral presentations.

4. Penalties for Late Submission

a) Reports, Literature Surveys-Scope-Research Objectives, and Compendia

Any report, Scope\Literature Survey, or Research Compendium not handed in by the date and time specified will be recorded as late. **TWO PERCENTAGE POINTS** will be deducted from the total project grade for **EVERY HOUR (or part therefore)** of lateness. The time at which the files are uploaded will be recorded and used to identify any late submissions.

As an example, this means that any project report that *would* have been given a 75 *if* handed in on time (12noon) will be given a 73 if it is handed in after 12noon but before 1pm, or 71 if handed in after 1pm but before 2pm.

If a hand-in has not been submitted by **9am** the following morning then the supervisor is required to seek out the student immediately and obtain the a copy of what is available. If the student cannot be found or will not deliver a report immediately then the draft report will be marked.

IMPORTANT: In the past, even moderately late submissions have caused reports to drop one or more grades. Remember, any extra marks stemming from improvements to the report made after the deadline are unlikely to cancel out the loss of two percentage points per hour.

b) Oral Presentations

Once the deadline for the upload of talks onto Canvas has passed, **NO FURTHER FILES WILL BE ACCEPTED**, the consequence being that you will not have access to slides during your oral presentation.