

Purpose

This assessment allows students to demonstrate that they have further developed their written technical communications skills and have extended their ability to apply fundamental engineering science to a design project using an engineering systems approach, in-part meeting course objectives 3, 5, 6, 7 and 8. This will be achieved by requiring each student to prepare and submit a design proposal in the form of a report with a cover letter, presenting their proposed design solution meeting the requirements of the Client Brief for the project.

Professional collaboration

The assessment tasks of the Technical Analysis, the Presentation and this Design Proposal parallel what happens in an engineering company as staff prepare a proposal for a project. Collating and preparing the final submission is often tasked to a single staff member to ensure the final report is coherent and covers all of the project requirements. You are to utilise the analysis you have previously prepared and are encouraged to utilise information gathered from (or at least checked against) your colleague's presentations, to prepare the Design Proposal for this final assignment.

You are required to use your company name and address information on the report and particularly in the covering letter. The submission is to be written as if it were being prepared for the Client. The name and address of the client will be provided in the Design Proposal topic area on the study desk.

Alignment with course objectives

This task will be assessed against the course objectives of – demonstrate an understanding of the engineering systems approach (objective 3), identify and link basic engineering science concepts (objective 5), apply basic quantitative relations for engineering science concepts (objective 6), demonstrate an ability to research and synthesise information (objective 7) and competently prepare and present, effective and efficient communications (objective 8).

Requirements

Students must address the cover letter to, and prepare the report for, the Chairman of the client company requesting the submission; that is - the company who authored the Client Brief. Details of name of the chairman and that company's address will be provided in the Design Proposal topic area on the course study desk.

Students are to assume the CEO is familiar with the project, but he/she is NOT interested in reading a lengthy technical analysis. The technical analysis in the report must be a simplified version, compared to that in the report for the earlier assessment. It must present the final equations that define the technical analysis of each section.

Each student is required to:

1. **complete the technical analysis required for all sections of the project**, which may include a cost analysis if it is part of the Client Brief. Students should utilise the technical analysis they completed for their Technical Analysis assessment, their Presentation and information from their colleague's presentations to develop a complete analysis of the engineering requirements for the design.
2. **prepare and submit a mathematical 'model' of the design**, by entering the equations and parameters into an Excel (preferred) or Open Office Calc spreadsheet, such that changing the primary independent variables in the spreadsheet will recalculate the dependent variables of the design. A fully complete spreadsheet for the problem would include all sections of the design, check calculated values against the design limitations specified in the design brief and be used to produce graphs for inclusion in the report.
3. **prepare and submit a report** (1300-1500 words, max 12 pages including title page and table of contents) presenting **the summarised technical analysis for all sections of the project** (suggested 1 page per section), a **brief discussion considering at least 3 alternative design solutions** and the **recommended design** meeting the requirements for the project.

The technical report must include: a title page; an executive summary; a table of contents with page numbers; the assignment name and page number in the header; the student's name and student number in the footer; numbered sections with suitable headings and formatting; brief introduction/background material; a summarised technical analysis; at least one diagram (numbered and captioned); at least one table (numbered and captioned); a brief discussion showing some application of the engineering method to identify and evaluate a few possible solutions to the design; at least one graph (numbered and captioned); a recommendation tabulating the key design parameters of the proposed solution; at least two citations and two references in Harvard style; appropriate paragraphing and grammatically correct English.

There is NO requirement for a list of figures, tables or a glossary. Students must NOT include a copy of the Design Brief, although tables of data from the brief may be used in the report if desired. A guide for Harvard referencing is available at the [library website](#) .

4. **prepare and submit a cover letter** (max 1 page) to preface the report as if it was sent to the Chairman of the company which provided the Client Brief for the project.

The letter must include: appropriate letter format; correct names and company addresses for the sender and recipient; a date; a suitable subject line; refer to the Client Brief for the project; refer to the attached design proposal; and use grammatically correct English.

Notes

*The design task used for the Technical Analysis, Presentation and Design Proposal assessments is a '**closed design**', meaning that it has well defined boundaries, parameters and limited requirements to be met. This is intended to control on the amount of effort students need to put into the assessments that utilise this material.*

If you find yourself seeking what you consider is 'necessary' extra information, then you are probably over thinking the detail of the problem and we recommend you clarify the task by posting questions to the discussion area for the assessment, or by contacting the course teaching team. All required information will be provided in the course materials or on the course study desk for each assessment.