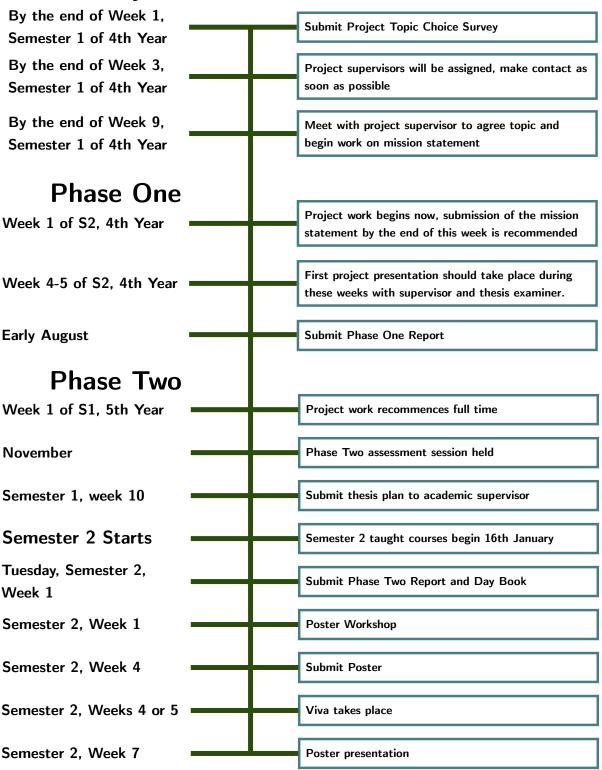THE UNIVERSITY *of* EDINBURGH
School of Engineering

**Electronics and Electrical Engineering**

# MEng Electronics and Electrical Engineering Project (Internal) Handbook

MEng Electronics & Electrical Engineering
MEng Electronics & Computer Science

# Placement Timeline

## Preliminary Tasks

**By the end of Week 1, Semester 1 of 4th Year**

Submit Project Topic Choice Survey

**By the end of Week 3, Semester 1 of 4th Year**

Project supervisors will be assigned, make contact as soon as possible

**By the end of Week 9, Semester 1 of 4th Year**

Meet with project supervisor to agree topic and begin work on mission statement

## Phase One

**Week 1 of S2, 4th Year**

Project work begins now, submission of the mission statement by the end of this week is recommended

**Week 4-5 of S2, 4th Year**

First project presentation should take place during these weeks with supervisor and thesis examiner.

**Early August**

Submit Phase One Report

## Phase Two

**Week 1 of S1, 5th Year**

Project work recommences full time

**November**

Phase Two assessment session held

**Semester 1, week 10**

Submit thesis plan to academic supervisor

**Semester 2 Starts**

Semester 2 taught courses begin 16th January

**Tuesday, Semester 2, Week 1**

Submit Phase Two Report and Day Book

**Semester 2, Week 1**

Poster Workshop

**Semester 2, Week 4**

Submit Poster

**Semester 2, Weeks 4 or 5**

Viva takes place

**Semester 2, Week 7**

Poster presentation

# 1. Introduction

In semester 2 this year you will be starting your MEng research project. This is an important, integral, part of your MEng course and represents 20 credits from 4th year and 60 credits (half) of the assessment for your 5th Year. The aim of this handbook is to provide some background information on how the project will be supervised and assessed, and to give some general information about the experience. You should read this handbook in conjunction with the Course Descriptors for MEng Electronics and Electrical Engineering Project Phase One (Internal) – ELEE11091 and MEng Electronics and Electrical Engineering Project Phase Two (External) – ELEE11090, which provide the definitive information about the project. There will also be two timetabled sessions timetabled which will provide additional details of the organisation and assessment of the projects, and allow time to answer any questions you have. These will be recorded if you are not able to attend.

Stewart Smith
Course Organiser, Phase One
School of Engineering

Tughrul Arslan
Course Organiser, Phase Two
School of Engineering

# 2. MEng Projects

MEng projects are practical research or design exercises. They give the student experience in applying knowledge and understanding gained in earlier study, as well as increasing the student's competence in a particular area of study. The project work develops student skills through applied research of a topic.

The objective output of a project is a novel design, or empirical knowledge, the extent of attainment of which forms part of the overall assessment. However, skills and attitudes appropriate to the professional engineer, developed in pursuit of the objective output, are just as important and are given corresponding weight in the assessment.

After completing the project, you should be able to:

- plan a project, by formulating objectives and a time schedule, identifying milestones, deliverables, constraints and the resources needed;

- manage a project, by working to the plan, keeping comprehensive records and exercising time management;

- identify sources of information and carry out an information search by selecting, collating and evaluating information from a variety of sources;

- write a clear, well-presented report, containing critical assessment of the project work and setting it in context;

- in a viva voce exam, describe, explain, discuss, support and critically appraise aspects of their project.

The project must be a self-contained piece of work carried out entirely by you in the available time. Any contributions by others, such as members of your supervisor's research group, must be clearly identified and/or referenced.

## 2.1. Structure of the Project

In order to fit the structure of the academic year, MEng projects are partitioned into two phases.

**Phase 1 comprises some or all of:**

- project definition (including **mission statement**)

- project planning

- background survey and literature review

- identification and provision of resources required

- preliminary practical work (e.g., familiarisation with tools and techniques)

- completion of initial work-package

- documentation (keeping **day book(s)** and preparation of **Phase 1 Project Report**)

- short **presentation** to supervisor and examiner on project work

- submission of a **Phase One Project Report** (electronic only).

**Phase 2 comprises:**

- completion of practical work (remaining work-packages)

- development of added value contribution

- documentation (keeping **day book(s)** and preparation of **Phase 2 Project Report**)

- submission of **Phase 2 Project Report** (electronic version) and **day-book(s)**

- submission of **Poster** and attendance at **Poster Session**

- **project viva** (including final **presentation**)

Note that day-books are to be handed in with the Phase 2 Report, not with the Phase 1 Report. Students whose projects are based in the University need to complete Phase 1 practical work by the end of Semester 2 and are **advised to have their write up of the Phase 1 project report at an advanced stage of completion before leaving for the summer vacation**.

## 2.2. University Based Projects

University-based (Internal) MEng projects are carried out over two semesters, the second semester of 4th year and the first semester of 5th year. In addition, at least one formal meeting should take place between supervisor and student during the **first semester** in the 4th Year for discussion of project details and mission statement.

The **mission statement**, which is the responsibility of the student, should be produced jointly by student and supervisor, and should detail the aims and scope of the project. Copies of all mission statements should be submitted on Learn, by the date shown in the Calendar of Events.

Shortly after the start of Semester 2 of 4th year, students doing a University-based project must give a short presentation on their project. This first presentation should cover the aims and objectives of the project, the background information obtained from the literature search, and the planning for the project. The presentation should last 15 minutes (plus 5 minutes for questions at the end) and will be given in front of the supervisor and thesis examiner. If supervisor or thesis examiner have other internal MEng project students they may also be present. This first presentation is not formally assessed. Students will give a second presentation early in phase two (semester 1 of 5th Year).

### 2.2.1. The Role of the Student

- Once the supervisor allocation is published in semester 1 of fourth year, the student should make contact with the project supervisor and arrange a meeting to discuss the project, preparation of the mission statement, and the first project presentation.

- Throughout semester 2 of 4th year and semester 1 of 5th year the student should have regular meetings at least once per week with the project supervisor to discuss project progress, plans, problems, etc.

### 2.2.2. The Role of the Supervisor

- The primary role of the University Supervisor is to select a suitable project for the student and provide adequate resources for completion of the project. Thereafter the supervisor is responsible for the technical supervision of the project. This involves monitoring the student's progress and, where appropriate, advising on aspects of the project and any problems encountered during the course of the project. The supervisor should ensure that the allocated project will allow the student to make a contribution to a technical issue, and that it is of sufficient magnitude to allow them to write up a thesis. A work plan that consists of several unrelated tasks is not suitable as a project as it does not provide the student with the opportunity to add value. Activities which involve the student working as

part of a team are encouraged, provided that it is possible to identify the student's individual contribution.

- Help the student with academic issues such as thesis preparation etc.
- Read and mark the thesis using the marking sheet supplied by the University.

# 3. Feedback and Assessment

During your placement you will need make a number of submissions these are detailed in Appendix A along with their submission dates. Further details about these submissions are provided here.

## 3.1. Opportunities for Formative Feedback

During the course of the project, you should meet with your supervisor at least once per week for discussion of progress and to agree on your next steps. At these meetings your supervisor should view your Day Book and sign (if possible) to demonstrate this. These regular meetings are your main point of contact and represent the best opportunity for timely feedback on progress.

The project presentations offer you an opportunity to practice your presentation skills as well as to get feedback on planning and progress from the supervisor and the thesis examiner.

The student should prepare outlines of the Phase One and Phase Two report structures for discussion with the Academic Supervisor and they should be agreed between the student and Academic Supervisor by the middle of July (Phase One) and Semester 2, week 10 (Phase Two). Your supervisor should be prepared to offer feedback on part of the thesis before the submission, but they shouldn't be expected to edit the whole report for you. Typically, supervisors should review about 10% of the thesis in detail as well as giving feedback on the general structure or table of contents.

## 3.2. Mission Statement

The first stage of an internal MEng project in Electronics and Electrical Engineering is the production of a mission statement. The purpose of this is to provide a clear but brief statement of the the intended scope and objectives of your project. A template is provided in Appendix B of this document.

### 3.2.1. Requirements

All mission statements will include the following declaration above the signatures:

> The supervisor and student are satisfied that this project is suitable for performance and assessment in accordance with the guidelines of the course documentation.

The appropriate documentation includes, but is not limited to, the content of this document, and the assessment guidelines.

### 3.2.2. Production and Feedback

The mission statement is produced by the student, in consultation with your supervisors. When a draft of the mission statement which is satisfactory to both the student and supervisor has been produced, the student will submit it to the dropbox on Learn and the supervisor will confirm that they agree with the content.

The Thesis Examiner for the project will read the mission statement and offer feedback on the project plan. The feedback should be recorded using the notes section.

### 3.2.3. Variation

It is in the nature of honours level project work that, as a result of design or implementation, literature search, or experimental results, the need for a change in direction or emphasis is identified in one or more elements described in the mission statement. Should you feel that it is necessary for your project work to deviate significantly from the mission statement, this should be discussed with your supervisor and a revised plan agreed. There is no need to submit a revised mission statement, but you should discuss the changes as part of the Phase One and/or Phase Two reports as below.

### 3.2.4. Inclusion in the Project Reports

The **original** mission statement must be bound in as part of the Phase One and Phase Two reports. Where the original plan has been significantly revised, as above, this will be appropriately addressed in the abstract, introduction, main discussion and conclusions. The thesis should contain all the background and reasoning required to justify the revision. This material will assist the assessors in formulating a view on your abilities in organisation and planning, critical assessment, and initiative.

## 3.3. Assessed Submissions

During your project, you are required to make three submissions for assessment. These are your Phase One and Two reports and a poster. You can find the submission dates and the marking breakdown in appendices A and C respectively.

### 3.3.1. Phase One Report

You are required to submit your Phase One report in early August (exact date in Appendix A) and it is marked by both your Academic Supervisor and your Thesis Examiner. The marking rubric will be available on Learn.

The Phase One reports the work undertaken in Semester 2 of 4th Year and typically covers the project planning, a literature review and any project work conducted so far.

### 3.3.2. Phase Two Report

You are required to submit your Phase Two report in January (exact date in Appendix A) and it is marked by both your Academic Supervisor and your Thesis Examiner. The marking rubric will be available on Learn.

The Phase Two report covers the work undertaken in Semester 1 of 5th Year and must also have an Impact and Exploitation chapter (see section 3.3.3). This report should have its own introduction and conclusion but should reference the Phase One report to avoid repeating material.

### 3.3.3. Impact and Exploitation Chapter

All MEng Phase Two project theses must include a chapter that describes the student's project in the context of a typical "product development cycle", which starts with the formulation of initial concept(s) and ends in the realisation of the target application(s). The main stages of the work are: research, development, validation and production of a commercial product or process, or of a technical/technology procedure, or a similar practical application/implementation of the

project work. Note that this chapter forms an integral part of the assessment of the project (see Appendix C).

The rationale behind this chapter draws heavily on the UK Research and Innovation requirement that researchers submitting proposals for research funding must be actively involved in thinking about how they will achieve excellent research outputs with direct and beneficial Academic, Economic and Societal impact. In particular, proposers must explore and discuss the pathways that may lead to that impact. This is one area where the School's research excellence and extensive experience of the "Pathways To Impact" (PTI) process can directly benefit our students. Undergraduate projects are not funded research proposals, but the PTI ethos is a vital way of thinking about your work.

In designing and writing your "Impact and Exploitation" chapter, you should normally write as if you were trying to persuade the agency or company that is funding your work to continue to do so and to aim for the impact that you describe. In some cases, a project may prove that the particular idea behind the project (circuit, algorithm, material, process etc.) is not a good one. This is also useful information, as it can also guide your funding agency/company toward a new and better approach. This chapter should then alter its focus to discuss the shortcomings that you have discovered in the project idea, and the characteristics that a viable, alternative solution would need to have to create the desired impact.

Further guidance on this section will be provided on Learn.

### 3.3.4. Guidance on Reports

#### 3.3.4.1.  Report Structure

The report has the following structure.  A font no smaller than 10pt should be used.

- Preamble
    - Title page
    - Cover Sheet
    - Original Mission Statement
    - Abstract
    - Statement of Achievement
    - Table of contents (listing chapters, sections, sub-sections, page numbers)
    - List of symbols/Glossary
- Main body of the report
- Acknowledgments
- References
- Appendices

Roman numerals (i, ii, iii, etc.) should be used for the page numbers in the preamble.  The first page of the main body of the report begins at page 1.

#### 3.3.4.2.  Title Page

The Title Page (front cover) should include your full name, UUN, project report name, project title and date.  It could look something like this:

### 3.3.4.3. Declaration of Originality

Your Phase One and Phase Two reports should include a page in the preamble containing this statement:

I declare that this thesis is my original work except where stated.

Signed ...........................................................................................................................

The declaration of originality constitutes an assertion that full and accurate references and citations have been included for all material, directly included and indirectly contributing to, the thesis.

### 3.3.4.4. Abstract

These notes are intended as a guide to the selection of content for an abstract, not to its typographical presentation.

The purpose of an abstract is to give any potential reader of a report (or other paper) specific information about the contents of that report. An abstract should offer help to two types of potential reader: specialists and others.

Specialists should be able to determine, from the abstract, whether they need to read the report or not. Readers who are not specialists, or to whom the subject is of peripheral interest, should be presented with the key information, so that it would be unnecessary for them to read the whole report.

An abstract should be informative and state the main results obtained in the work, as well as indicating the general scope of the report. An abstract is not part of the text of the report and should be complete in itself. There should be no table numbers, figure numbers or reference numbers. If it is essential to refer to other work, the reference should be given in full. An abstract is often separated from the article it covers and reproduced in a list of abstracts, so it must be capable of being understood in isolation.

While an abstract must be concise, its usefulness must not be compromised by excessive brevity. The bad abstract states:

> "Here we report a new circuit implementation which will benefit the design of counter circuits."

The good abstract states:

> "A new digital circuit structure, with high speed switching properties, is reported. In state machine applications, switching rates fifty percent higher than circuits based on RS or JK flip-flop structures have been obtained. Examples and results for counting circuits are provided."

A writer should feel no inhibition about extending an abstract, but should read each statement critically, to determine whether it contains essential information or, indeed, any information. General, flowery, comments such as:

> "In recent years, it has been found necessary to improve the signal-to-noise ratio of many types of amplifier."

or:

> "Modern industrial instrumentation relies heavily on digital techniques to process signals."

These may be true, but they have no place in an abstract and are just a waste of space.

A critical perusal of some project reports will quickly reveal examples of abstracts containing statements that are irrelevant, unhelpful, unspecific, inane or meaningless. Such statements are not only useless to a reader but, in the case of a publication, may result in the paper being ignored, because of the irritation caused by the abstract.

When you read the first draft of an abstract you have written, you should ensure that every statement made is necessary and that its removal would result in a less informative abstract. At the same time, removal of any phrase should not result in the reader being deprived of an important piece of information.

### 3.3.4.5. Statement of Achievement

This is a brief statement outlining what you yourself (as opposed to your supervisor, technical staff, team members if you were working in a team, etc.) contributed to the project and what you yourself achieved. The statement need not be more than a couple of paragraphs and should certainly not take up more than one side of A4.

### 3.3.4.6. Appendices

Data, calculations, or other material that the reader might need to (i) check your results, or (ii) repeat your research, go in an appendix. Most readers do not need to read this information. If the material is an essential part of the report, it does not go in an appendix, but rather in the main body of the report.

Appendices should be numbered A.1, A.2, etc.

### 3.3.4.7. Style

The reports should be written in Concise, grammatical prose composition according to standard British usage. The University has a comprehensive Style Guide, which can be reviewed to identify common mistakes.

Remember when writing your report to consider the markers 'level of knowledge of the material, and their technical background (these two are, of course, not the same thing). Your Academic Supervisor and/or Thesis Examiner will be generally knowledgeable in electronics and electrical engineering, but not necessarily a specialist in your project area.

### 3.3.4.8. Format

Students are encouraged to use School and University computing facilities to produce their reports. A $L^A T_E X$ document preparation system template is provided and can be found in on **Learn** in the **Course Materials** Section in a folder "**Writing Your Thesis**". Additional information from the University on using Word or other software to produce the thesis will also be provided. The LaTeX template covers the standard requirements, most of the specific on fonts etc. below are for those building their thesis in Microsoft Word or similar word processing software.

Reports should meet the following specification:

- A4 paper; single column.

- At least a one inch left-hand margin, one and a half or double-line spacing, with extra spacing to accommodate mathematical equations, etc.

- Chapters, sections, sub-sections of chapters to be numbered decimally: for example, Chapter 1, Section 1.1, sub-section 1.1.1 etc.

- Page numbers located at the top right-hand corner of pages to run serially 1, 2, ... from the beginning of the main text, earlier pages (front matter, including tables of contents etc.) being numbered i, ii, iii, iv...

- Diagrams and graphs (upright wherever possible) to be drawn to British Standard, inserted in the body of the text, if necessary on separate sheets, as close as possible to the passage to which they refer and facing the same way as the rest of the text.

- Colour may be used for diagrams and graphs, where it substantially improves legibility, butmonochrome line drawings are normally expected and are preferred for reproducibility. Where colour or continuous shade images are used, all copies must be reproduced to the same standard.

- Tables, diagrams and graphs to have their number and a clear, explanatory legend, sufficient to make their purpose understandable without reference to the main text, placed directly below them.

- Where any figure (diagram, graph, table, etc.) is not wholly your original work, the legend must include a reference to the origin.

- Key equations, tables, diagrams and graphs to be numbered serially, chapter by chapter, (e.g. in chapter 3 the first equation is (3.1), the next (3.2) etc.);

- Equation numbers to be placed on the right-hand side of the page.

- SI units to be employed throughout.

- Standard symbols to be used wherever possible. Mathematical text should be italicised but units should not be. E.g. Equation in Times Italic font with units in Times Roman.

- Mathematical symbols to be typed consistently and carefully.

- Appendices to be numbered A.1, A.2, ... ; equations in Appendix 1 to be numbered (A.1.1),(A.1.2), etc.

- References in the body of the text to be indicated by numerals, either placed in square brackets, or superscripted, assigned serially in order of first appearance. The citation of references is an important aspect of the presentation of any written technical work and is an essential part of any defence from an accusation of plagiarism.

- Listed references to be given in standard form (Section 3.3.4.11)

### 3.3.4.9.   Page Limits

Quality of content takes precedence over quantity. The information given here should be taken as a reasonable guideline to the expected size of the submitted documents. The preamble pages are not counted in the numbers given below. Those pages following the main body of the text of a project thesis (References and Appendices) are counted separately as detailed below. The page counts includes any diagrams, graphs and tables.

|  | Phase One | Phase Two |
|---|---|---|
| Main Body | 40 pages | 50 pages |
| Reference & Appendices | 10 pages | 30 pages |

**3.3.4.10. Copyright and Plagiarism**

A substantial proportion of honours year (and earlier) work involves working in groups and making use of the published and unpublished work of others. This is an everyday part of academic and commercial work. However, it imposes on you a responsibility to ensure that, in using the work of others, you neither steal their intellectual property, nor mislead others as to the identity of its owner or originator.

Much of the intellectual property which you will make use of in your studies will be covered by copyright law. Guidance on this is available from the Copyright Licensing Agency.

Where you present material and ideas based on the work of others, you must provide adequate referencing (see 3.3.4.11), to ensure that you do not mislead others as to the extent of your own contribution. Failure to provide adequate referencing will result in you being guilty of plagiarism, which is the uncredited use of somebody else's words or ideas.

- You must avoid producing text by stitching together sentences, clauses or phrases from a source or sources and then simply adding or changing a few words here and there. Even if you include references to your sources to acknowledge that the ideas are somebody else's, you are guilty of plagiarism because you are misleading the reader into thinking the words are yours. This type of plagiarism is very easy to detect using software such as "Turnitin".

  - Note that ALL project theses are automatically run through "Turnitin" and that your thesis may be investigated for plagiarism based on the similarity report. If it looks as if there is a case to answer, the thesis will be passed to the College Academic Misconduct Officer, who can apply a range of penalties, including setting the mark for the thesis to zero. If the applied penalty results in failing the project course, you will not be able to graduate with honours.

- If you need to quote directly from the work of another, i.e. copy material verbatim, the quotation must be clearly set in quotation marks, "", and the origin of the quotation referenced in the usual way. Where the quotation is extensive, e.g. more than ten words, it should be set as a separate paragraph, still in quotation marks, and given a wider than normal left hand and right hand margin. Be careful, however, that you don't include an excessive amount of quoted material.

- In the case of a figure or table taken directly from a source, you should include a reference to the source in the caption for the figure/table.

- Even if you modify the original material, e.g. by changing the words, re-drafting a diagram, or reformatting a table, you must still give clear and accurate reference to the source, directly adjacent to your version, to acknowledge you are using their ideas.

You should also consult the University document "Guidance for Students on Avoiding Plagiarism" which can be downloaded from the Academic Services website.

### 3.3.4.11. Referencing

References are to be given in numerical order (i.e. in the order they first appear in the text) and in full, in accordance with the Vancouver reference style used by the IET or the IEEE style for references. IEEE bibliography styles are available for Endnote and in most distributions of LaTeX.

The University subscribes to Cite Them Right. This resource provides guidance and examples on the Vancouver referencing style, the IEEE referencing style and referencing/plagiarism avoidance in general.

The Library has produced guidance on using reference management software.

### 3.3.4.12. Lateness Penalties, Extensions and Special Circumstances

Both the Phase One and Phase Two report are formally assessed and normal lateness penalties[1] will be applied based on the time that the report is submitted to Learn. It is your responsibility to ensure that your report has been submitted correctly. Correct submission will result in a receipt from Turnitin and the ETO will send confirmation of submission after the submission deadline. If you have any technical problems that delay your submission you should contact the course secretary (see Appendix A) immediately and attach a copy of the report that you are attempting to submit to your email. This is not a replacement for online submission and you should still upload your report to Learn as soon as possible.

Extensions and Special Circumstances are handled by the Extensions and Special Circumstances Service.  An extension cannot be arranged by the Course Organiser.

A more detailed description of both processes can be found in the ETO Hub. Please note that while Special Circumstances can be used to waive lateness penalties, the Phase One report must be submitted in time to be marked and then ratified at the August Board of Examiners meeting.

## 3.3.5. Day Books

Day books (lab books) are submitted for assessment at the Phase Two stage of the MEng Project.  However, the information in this section is important for your activities at every stage of the project.

If agreed between supervisor and student, the form of the day-book can be an electronic notebook or shared file but it should allow change tracking to ensure that it represents a continuous record of the project work. This will form part of the final **Phase Two** submission and so it needs to be in a form which is accessible by the Thesis Examiner and the external examiners for assessment and moderation.

### 3.3.5.1.   Nature and Extent of Records

A separate day-book should be kept for each project or other block of practical work which you undertake.

The day-book is a diary, a journal, a day by day, hour by hour, record of the work which you do in the pursuit of the objectives of the practical work. In it, you should make an accurate and comprehensive record of your activities, the resources used, the results obtained and such notes on interpretation, planning and other organisation of the work, that another person, conversant with the area of your work, could reconstruct your activities, in full.

Thus, the day-book records failure as well as success.

- It records good ideas and bad ideas.

---

[1]https://www.wiki.ed.ac.uk/display/etohub/Coursework#Coursework-LateSubmissions

- It records leads which produce the big breakthrough, as well as those which go nowhere.
- It records decisions to do things and decisions to not do things.
- It records things which are undecided.
- It records how tests were set up.
- It records raw results, as tables, technical sketches, graphs, etc.
- It records references to sources of ideas and information.

It is a chronological record; one made at the time and place of the activity. Thus you cannot tell what the interpretation, good or bad, of a given record of action will be. The analysis and interpretation (and the records of such) come later.

It is not a formal report, neatly written up after the event, edited to produce a consistent and logical flow of ideas and actions. It is life in the raw. It contains working notes, made as thoughts and plans are conceived, modified in real time as the ideas develop. It is a book of rough working. Nonetheless, the records should be legible.

The records in a day-book are dated.

The pages are numbered.

There are no gaps "to be filled in later". If a line of thought or investigation is suspended, to be resumed later, the date, time and page number information is used to cross-reference, and so link, the related records (it is acceptable to go back and add in a forward reference, as well as making a backward reference, when resuming something).

By following your day-book, another person should be able to reconstruct (literally, if necessary) all the work which you have performed, in the order in which you performed it.

You may usually expect your day-book to be inspected and commented on at regular intervals, e.g. by a supervisor. When this happens, ensure that they sign and date the day-book at the latest record.

### 3.3.5.2.   Physical Characteristics (if not digital)

Your name and matriculation number should be shown clearly on the outside of the front cover.

The day-book must be an A4 notebook with sewn and glued binding (not stapled, or loose, or removable leaf, or spiral bound). It has to stand up to prolonged continuous use without losing pages. It must also provide reasonable assurance of authenticity, in that it should not be possible to easily remove a leaf and substitute another. If you need to attach inserts (e.g. printed graphs, diagrams, annotated sections of computer program, photocopied data, etc.) you are recommended to staple them in, or to ensure that the glue you use will remain secure for at least a year after the last record is made.

### 3.3.5.3.   Keep it Safe!

In the case of MEng projects, the day-book is an important component of the assessment and will be examined in detail by the supervisor. Once your project is completed and written up, the day-book **must** be submitted to ETO along with the MEng (Phase Two) project report. It is therefore important that you ensure it does not get lost or stolen. If you remove it from the workplace, make sure it is transported and stored securely. There have been cases in the past where lab books have been left in unattended bags (in cars or on public transport) that were later stolen. Give your contact details (email etc.) inside the front cover so that if someone finds it then there's a better chance it will be returned.

### 3.3.6. The Poster

In addition to writing your final report you will be required to produce an A1 poster, from a template provided on Learn, describing your project. The poster should act as a summary of your work, a conversation starter, and source of information. The posters will be displayed at the "Poster Session" in semester 2, usually week 7. The poster session is open to Industrial Supervisors, all students, academic staff and invited visitors. As the poster is being displayed to people outside of the University and students, you should ensure it does not contain any confidential information.

Before making the poster, consider:

- What are you trying to achieve by presenting the poster?
- Who will be attending the poster presentation and how much knowledge will they have of your field?
- What are you going to present? What are your key messages?
- Explain the big picture of your work and why it is important.
- Focus on your findings and major results.

A poster normally includes:

- Title and People involved in the work and their affiliation. In our case, this is you and your supervisor(s).
- Introduction: it should include clear statements about the problem that you are trying to address. Why did you work on the project? Why is it important and exciting? What are the project aims and objectives?
- Theory or Methodology: explain briefly the techniques, methods or procedure used in your project.
- Key Findings or Main Results: Use the poster to advertise your main findings and achievements. Ideally, this should be the focus of your poster.
- Interpret your findings, so that readers can understand what your achievement is, what your story is.
- Possibly include a section of Further Work, which are your recommendations and thoughts about how the work could / will progress, etc.
- Do not forget acknowledgments and references

A poster workshop will be held in semester 2, week 1 after the submission of the Phase Two report but you may wish to think about figures, data etc. that you would like to include before that.

We are often asked questions about how to handle confidential information when producing a poster. If you are worried this will be a particular problem for your project, make sure to discuss it with your supervisors at one of the visits. The following options are examples of what can be done.

- Describing a process as A+B = C
- Removing axes from graphs
- Talking about percentage improvements rather than absolute numbers
- Discussing design constraints and trade-offs rather than presenting the design

If you remove information from figures or tables you should explain in the caption that this is for confidentiality reasons so that your markers know it was deliberate.

The deadline for poster submission is mid semester 2 (exact date in Appendix A). You should submit a pdf version on Learn. You will also submit a document confirming whether the poster (and your project abstract) can used after the poster session.

Your poster will be marked by two academics at the poster session.

## 3.4. Viva-voce examination

The viva will happen during semester 2 after you have returned from placement and submitted your Phase Two report. It will last around 45 minutes and be attended by the student, Academic supervisor and Thesis Examiner.

The format will be a 15 minute presentation followed by 5 minutes of questions on the presentation and then further questions on the thesis. Your mark will be based not only on the clarity of your presentation but your ability to respond to questions.

After the viva you should upload your presentation to the dropbox on Learn.

# Appendix A: Course Information year 2022/23 and 2023/24

**Course Organiser:** Phase One: Stewart Smith, Stewart.Smith@ed.ac.uk

Phase Two: Tughrul Arslan, T.Arslan@ed.ac.uk


**Course Secretary:** Megan Inch-Kellingray, Megan.Inch-Kellingray@ed.ac.uk

Lynn Hughieson, Lynn.Hughieson@ed.ac.uk


## Submission Deadlines

| Submission | Due Date | Submission Method |
|---|---|---|
| **Phase One** | | |
| Mission Statement | Friday 9$^{th}$ December 2022 | Learn dropbox |
| Phase One report | Thursday August 3rd 2023 @16:00 | Turnitin dropbox |
| **Phase Two** | | |
| Phase Two report | Tuesday 16th January (2024) @16:00 | Turnitin dropbox |
| Daybook | Tuesday 16th January @16:00 | Learn dropbox |
| Poster | Tuesday 6th February @16:00 | Turnitin dropbox |
| Viva Presentation | Within 48 hours of the viva | Learn dropbox |

# Appendix B: Mission Statement Template

**Project Title:**
**Student:**
**Academic Supervisor:**


**Project Definition:**


This project will be broken down into the following tasks.

**Preparatory Tasks:**

- **Task 1 etc...**

**Main tasks:**

- **Task 1 etc...**

**Scope for extension:**

- **Task 1 etc...**


**Background knowledge:**
**Resources:**
**Location:**
**References:**


The supervisor and student are satisfied that this project is suitable for performance and assessment in accordance with the guidelines of the course documentation.


Signed


Student:................................................................................................................................


Academic Supervisor: ...........................................................................................................

# Appendix C: MEng Electronics and Electrical Engineering Project (External) Marking Scheme – 2022/23 and 2023/24

This Appendix should be read in conjunction with the assessment guidelines document.

| Assessment Category | Weighting |
|---|---|
| **Phase One**<br>Practical work (30%) and thesis (70%) | 20 Credits<br>Year 4 |
| **Phase Two**<br>Assessed by Practical work (25%) thesis (55%), poster (5%) and viva (15%) | 60 Credits<br>Year 5 |
| **Total** | 80 Credits |

| | Assessment Category | Weight (%) |
|---|---|---|
| **Phase One Breakdown** | **Practical: Planning and Organisational Abilities, Quality of Day-book, Use of Resources, Professional Attitude to Work**<br>This will measure and reward the student's enthusiasm and organisation in the project. | 30 |
| | **Thesis: Editorial Quality and Conformity to Thesis Requirements**<br>This will reward more than just the elegant use of a word processor. Marks will reflect care and attention to detail in the structure, style and correct presentation of the document. | 10 |
| | **Thesis: Clarity of Information Presented**<br>This mark is for the efficient and painless communication of the assembly of knowledge. | 15 |
| | **Thesis: Critical Review of Background Material**<br>This will assess the breadth, variety and depth of the information obtained in furthering the project, including the background and motivation for the work. | 15 |
| | **Thesis: Plan for Project Phase Two**<br>This will assess how well the student has developed their plan for Phase Two of the project. | 10 |
| | **Thesis: Engineering Content and Technical Accuracy**<br>This will identify the nature and extent of the engineering challenge accepted in the project. | 20 |
| | | 100 |

| Assessment Category | Weight (%) |
|---|---|
| **Practical: Planning and Organisational Abilities, Quality of Day-book, Use of Resources, Professional Attitude to Work** <br> This area will measure and reward the student's enthusiasm and organisation in the project. | 6 |
| **Practical: Critical Review of Background Material and State-of-the-art in the Project Area** <br> This will assess the breadth, variety and depth of the information obtained in furthering the project. | 6 |
| **Practical: Critical Assessment of Work Carried Out, Results and Progress** <br> Here the student is marked on their intellectual contribution to the development of the project and to the detailed experimental design. | 6 |
| **Practical: Added Value, Initiative in Experimental Design** <br> This will measure the extent to which the student took the project beyond the basic requirements of the mission statement. | 7 |
| **Thesis: Editorial Quality and Conformity to Thesis Requirements** <br> This will reward more than just the elegant use of a word-processor. Marks will reflect care and attention to detail in the structure, style and correct presentation of the document. | 8 |
| **Thesis: Clarity of Information Presented** <br> This mark is for the efficient and painless communication of the assembly of knowledge. | 7 |
| **Thesis: Engineering Content and Technical Accuracy** <br> This will identify the nature and extent of the engineering challenge in the project. | 20 |
| **Thesis: Impact and Exploitation** <br> This will assess how well the student has identified the various potential impacts of research carried out in the relevant areas of their project. | 5 |
| **Thesis: Added Value, Originality and Critical Assessment** <br> These are the areas which will elevate a thesis, from being a competent collection of facts, to being a contribution to the overall body of knowledge. | 15 |
| **Viva: Structure, Organisation and Quality of Final Presentation** <br> This will reward the thought and effort that went into the preparation of the final presentation and the student's ability to deliver information in a clear, confident, and concise manner. | 6 |
| **Viva: Appreciation of Aims, Critical Appraisal of Outcomes** <br> This will assess the thought and effort that went into the preparations for the project. | 3 |
| **Viva: Depth of Knowledge of Project and Background Material** <br> This will assess the limits to the student's knowledge and understanding of the project work. | 3 |
| **Viva: Ability to Respond Intelligently to Questions and Discuss the Subject** <br> The student's critical judgment and clarity and conciseness of response is measured here. | 3 |
| **Poster** <br> The student's ability to present and discuss their project through a poster is measured here. | 5 |
| | 100 |

*Phase Two Breakdown*