

The Third Year Project 2018-19

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2 THE PROJECT

The aim of the project module is to demonstrate that you can integrate the knowledge, understanding and skills obtained throughout your degree programme in order to plan, execute, and report on a realistic exercise in the practice of engineering at a professional level appropriate to a BEng graduate. **You** are expected to take the initiative in organising your work, and in seeking help and support from your supervisor and other staff if you need it. You will need to achieve a mark of 40% in this module in order to graduate with an honours degree (3rd class or better).

You will be expected to work independently on the project over the course of the autumn and spring terms. You should have completed all practical project work by the end of the spring term, and your supervisor must not give you any assistance after this date. You will write the final report over the Easter vacation. There will be a short presentation after the summer exams.

3 IMPORTANT DATES 2018-19

The deadlines below are all 12:00 (midday).

Monday 8 October 2018	Proposal to be uploaded to Blackboard.
Wednesday 9 January 2019	Interim report to be uploaded to Blackboard.
Friday 29 March 2019	Practical work ends (end of spring term).
Friday 3 May 2019	Final report to be uploaded to Blackboard. One paper copy to be submitted to College House.
27 th May to 1 st June 2019	Project presentations will be during this week.

4 ASSESSMENT AND FEEDBACK

To demonstrate that you have met the aims of this module you will be assessed by two reports, and a presentation to a small group of students and staff. More details about these assessments are below.

- The interim report is worth 20% of the module marks, and will be handed in immediately after the Christmas vacation (the first day of the January exams). The interim report will be marked by your supervisor.
- The final report is worth 30% of the module marks, will be at most forty pages long, and will be handed in immediately after the Easter vacation (Friday of the first week of the summer term). The report will be marked by your supervisor and an internal examiner, another member of staff. Immediately after the summer exams you will also give a presentation (15%) to a group of students and your project examiner.
- The remaining 35% of the module marks will be awarded by your supervisor and examiner, for your overall technical achievement.

5 THE PROPOSAL

A proposal document should be submitted via Blackboard by 12 noon on the deadline given in section 3. The proposal is not marked, but it is important – it is a statement of what the aim of the project is, and how you are going to achieve that aim. It is also an agreement between yourself and your project supervisor.

The proposal document will also need to include:

- A completed risk assessment form.
- COSHH forms for any substances identified in the risk assessment (if no substances are identified in the risk assessment, no COSHH forms are necessary).

These forms are available on the EG3005 Blackboard site. You will also need to print out and sign the Declaration of Compliance (DoC) form, available from the same location.

The DoC form needs to be signed by yourself, your project supervisor, and (if appropriate) the lab supervisor for the area you are going to be working in. The signed DoC form must be taken to the

student administration centre in College House – until we receive a DoC form, you will not be permitted to start work on the project.

Once you have agreed with your supervisor that the proposal is acceptable, and the DoC form is filed in College House, you are ready to start work on the project.

6 WORKING ON THE PROJECT

6.1 SUPERVISION

Your supervisor is not there to do the project for you – he/she will give you some assistance if necessary, and monitor your progress, but by the third year students are expected to be able to work independently, and take responsibility for putting in the required amount of effort. You should meet with your supervisor once a week (this is essential for monitoring progress – if you are unable to physically meet with your supervisor, you should send them a progress report). Your supervisor is also your personal tutor for year 3, and your discussions with your supervisor should also cover general academic progress, career plans, and any problems you are encountering with your course.

6.2 SAFETY

Any experimental project will have safety considerations associated with it, and you will need to discuss these with your supervisor. It is your responsibility to ensure your own safety, and the safety of others working alongside you. It is your supervisor's responsibility to make sure you have the information necessary to make decisions about your safety. If you or your supervisor decide to change the experimental aspect of the project at any stage, you must discuss the safety implications.

Your supervisor should make you aware of the relevant Departmental Risk Assessments and COSHH assessments, and ensure you have adequate training in the use of any apparatus you will use. The Department's Safety Officer is Mr Paul Williams (pdw@le.ac.uk), and he will be happy to advise on safety issues. The Department's safety web pages are on Blackboard (go to 'Courses' and search for 'safety').

Before you start any practical work, you and your supervisor must fill in and sign the Declaration of Compliance form, available from the Department's safety web pages. This must be shown to the technician in charge of the area where you will be working, who will have the final say on whether you can work in that area.

6.3 EQUIPMENT AND DEPARTMENTAL SERVICES

Your supervisor will arrange for you to have access to any equipment required for your project, and will also be able to advise on how to have equipment manufactured in the workshop, if that is necessary. You are strongly advised to have manufacturing done as soon as possible, and certainly before the end of the Christmas vacation. The workshop has very limited capacity for manufacturing in the spring term, and you should not submit any requests after Christmas. Staff in the main workshop will be able to advise on manufacturing issues and any mechanical components available from the stores.

Students doing projects in the Electrical Power research group will be able to access some electrical components in the third floor projects lab. Lab technicians in this and other project areas may also be able to give you advice on purchasing.

All other purchasing should be done via the Departmental Stores. Each project will have a budget of approximately £150, and a charge code associated with it.

Your final report should contain a list of all expenditure on your project (including estimates of the cost of components obtained from stock).

7 THE INTERIM REPORT

The interim report is worth 20% of the module marks, and needs to be uploaded to Blackboard by the deadline given in section 3. The report should contain:

- A description of the aims of the project, and your plan for achieving those aims – this may be included as a chapter of the final project report, amended as necessary.
- A summary of the work you have done so far on the project, and your plan for completing it.

The interim report should be no longer than ten pages, and should be written using the Department's standard report template, and in conformance with the Department's technical writing standard.

The report will be marked by your supervisor, who will give feedback on the standard of your technical writing as well as your progress on the project work. This will take two forms: the report will have comments attached to it using the 'GradeMark' system on Blackboard, and you should use the first project supervision meeting of the spring term to discuss the report feedback with your supervisor.

7.1 PLAGIARISM

By this stage in your degree programme, you should be well aware of the department's attitude to plagiarism. The department's plagiarism guidelines are on Blackboard (in the Engineering Students site), and there is a guide to quotation and referencing on the same site. Your report will be submitted via Turnitin, an online system which checks your work against thousands of other reports, websites and books, and this will show your supervisor and your examiner if you have copied work from elsewhere. Don't do it. If you are found to have plagiarised parts of your report, the penalties may include expulsion from the university without a degree (this is not an idle threat, it has happened in previous years).

8 THE FINAL REPORT

The final report should be at most forty pages long and, like the interim report, it should be written using the Department's template and technical writing standard.

The report must be uploaded to Blackboard by the deadline given in section 3, and **a printed copy** must be handed in to the general office by the same deadline – this should be printed single-spaced, double-sided, and bound in a standard binder (which you can collect from the general office in advance).

The electronic and printed copies must both be submitted before the 12:00 noon deadline for the project to be considered to be on time. Late submissions will be subject to the normal university penalty of 10% subtracted on the first day and 5% for every subsequent working day.

The report will be double marked by your supervisor and an internal examiner and given a mark out of 30 (as it is 30% of the module assessment). The assessment scheme is in appendix B.

The final report should be understandable by a successful student who has completed the second year of the appropriate engineering degree course. Do not assume too little knowledge (you do not have to explain Ohm's law), or too much (it is possible that the internal examiner will know far less about the subject of the report than you do). Keep to the point, and do not include irrelevant material in the hope of padding out your report – you will not receive credit for irrelevant material, or for material which has simply been copied and pasted from elsewhere (even when this is properly referenced – if it is not properly referenced, you will be subject to the penalties for plagiarism).

The report should be split into between four and eight chapters, each dealing with a specific topic (for example an introduction, background to the project, a few chapters dealing with specific areas of the project, and a conclusion). The introduction should be the last thing you write. There should be a table of contents, and all pages should be numbered. Appendices are seldom necessary, and if included they should not contain information that is vital to the understanding of the report (this should be in the main body of the report). Neither should they include information which is generally known or easily available elsewhere (e.g. datasheets downloaded from the web). It is not necessary to include printouts of computer code or tables of experimental results as an appendix – if your supervisor or examiner wants copies of your full results or code, these should be sent to them directly.

The report should include discussion of ways in which the actual progress of the project diverged from the proposal.

The printed report (but not the electronic report) should also include:

- A breakdown of costs (see the attached form).
- A copy of the project proposal.

Neither of these will contribute to the page count.

The mark for the project report is not subject to the University's 21-day rule for feedback – you will be given the mark for the report after the summer exam board, and you may also ask to see the mark sheet (with the marks and feedback for all aspects of the project) after the board has met.

9 THE PRESENTATION

After the summer exams, you will give a presentation on your project to an audience of about ten or a dozen other third year students, and the staff who will be examining them. The presentation should be ten minutes long, and there will be about five minutes afterwards for questions to be asked. There may only be a few days between your final exam and your presentation – you should start preparing for the presentation before your final exam, don't wait until the last minute.

Ten minutes is not very long – you will need to carefully plan what you say, and how. Ideally, get a group of your friends together beforehand and run through each other's presentations. Speak clearly, slowly, and with a reasonable amount of volume – you don't need to yell at the audience,

but you do need to be audible. You will have access to a PC with a data projector, and that is the only visual aid you should use. You will not be expected (or allowed) to spend time in a practical demonstration. If you are using PowerPoint, use no more than ten slides (preferably fewer), and these should have a small amount of writing on them – three or four short points per slide, at most. You don't want the audience to be concentrating on reading the text on your slides instead of listening to what you are saying. It makes more sense to use slides for diagrams or pictures of apparatus.

On the presentation concentrate on your project – you are not selling yourself, you are aiming to give the audience a clear idea of what you have done, why you did it and how you did it. A typical presentation should start with a summary of the background and aims of the project, move on to a more detailed description of an area of the project, and end with a summary of your achievements and ways you think the project might be extended. You don't need to describe every area of the project in the same depth – it is a good idea to pick a particularly interesting or important part, and focus on that.

10 THE VIVA

If you are at risk of failing the project, or if your report and presentation were of such poor quality that they feel additional examination is necessary, or if there is some doubt about how much of the project was your own work, your examiner and supervisor will arrange a “Viva” (an oral examination). The purpose of this is to talk about your project and the report, and to ask you questions in order to judge how much you really know about the subject. They may also ask to see your project work, but not necessarily.

11 APPENDIX A – MARKING SCHEME FOR INTERIM REPORT

Mark	Description of Technical Writing Standard
0	The report makes little or no sense, or is very brief. The student needs to take urgent action to improve their writing skills.
1	The standard of writing is poor, and the student needs to ensure that they improve their writing skills significantly before submitting the final project report.
2	The standard of writing is acceptable, but the student should think about improving their writing skills.
3	The standard of writing is good.
4	The standard of writing is exceptional.

Mark	Description of Technical Achievement
0-2	Bad fail – at the lower end of the scale the student and supervisor have not met, or have barely made contact. At the upper end of this scale, the student has put in some effort but not nearly enough, and has made no progress.
3-6	Fail – the student has made very little progress, has not planned the project sufficiently, and requires considerable and frequent help from the supervisor.
7	Bare pass – the student has showed no initiative, has kept poor (or no) records of work, and requires considerable help.
8	Third class – the student has shown some initiative and motivation, has achieved some results, but requires considerable help to do so.
9	Lower second class – the student has planned the project to some extent, and is working independently to some extent, but still requires input from the supervisor to achieve results and is simply doing what they are told.
10	Upper second class – the student has planned the project reasonably well, considers different solutions to a problem and chooses alternatives appropriately. Requires some assistance from the supervisor, but only with advanced concepts.
11-12	First class – the student is well organised, keeps good notes and is able to deal with problems without relying on the supervisor to suggest solutions. The project is starting to include work based on the student's own ideas (possibly from background reading).
13-14	Good first class – the student is doing a substantial amount of independent research into the project topic. The project shows clear evidence of originality, and virtually no guidance from the supervisor is needed.
15-16	Outstanding first class – the project is almost entirely original, and the student is providing the supervisor with insights into the topic.

12 APPENDIX B – MARKING SCHEME FOR FINAL REPORT

A mark will be awarded out of 7 for each of these aspects – if the report is absolutely perfect in every way, another couple of marks will be added to round up to 30.

7	Almost impossible to improve this aspect
6	A few minor faults but overall of a professional standard
5	Some problems with this aspect, which would require correction
4	A few problems, but the report is acceptable
3	Many errors, and these cause difficulties in understanding the report (BARE PASS)
2	This aspect of the report has severe problems (FAIL)
1	There is almost no evidence of this in the report
0	There is no report

Overall presentation (neatness, style, grammar, logical presentation, etc.)	
Introductory chapters and sections of chapters (structure of the report – clear statements of aims and methods, context, etc.)	
Presentation of results, analysis and design (can the reader understand the work, is the procedure followed given appropriate justification?)	
Discussion, conclusions, summary (reflection on whether objectives were fulfilled, reasons why they might not have been, suggestions of ways in which the student might have approached the project with the benefit of hindsight, future work which might build on the project)	
REPORT	/30

13 APPENDIX C—MARKING SCHEME FOR PRESENTATION

[illegible]

14 APPENDIX D – MARKING SCHEME FOR TECHNICAL ACHIEVEMENT

33-35	Outstanding work, suitable for publication in a professional journal, significantly advances the relevant area of knowledge.
29-32	Excellent work, of the standard expected of a research student (good first class)
25-28	Substantial originality, worked independently, good results (first class)
21-24	Competent work, some originality, mainly worked independently (2.1)
18-20	Reasonably competent, not much originality, needed significant assistance (2.2)
14-17	Poor achievement, needed a lot of assistance (pass-third)
10-13	Very little achievement (FAIL)
1-9	Almost nothing achieved
0	Absolutely no evidence that anything has been done
TECHNICAL ACHIEVEMENT	
/35	

15 APPENDIX E – ASSESSMENT OF COSTS

All projects cost something to run. The point of the costing form is to help you appreciate, as you go out into the working world, that there are costs associated with running a project and that you need to be able to make a rough estimate. When completing the costing form for your project you will need to look at what equipment, materials, lab time and technical staff time you have used during your project. For example, equipment such as the SEM will have an operating cost per hour which you will need to factor in. In order for you to complete your costing form you will need to list the following:

- Hourly cost of use of equipment such as the SEM (available from the technical staff) – this is calculated by taking the capital cost and depreciating it over 5 years based on the number of hours of working time it might reasonably be available. You can therefore apply this method to any major piece of equipment.
- Smaller pieces of equipment (in the few thousands of £ category) you do not need to cost in (although they all did cost money in the first place!) because these are part of general laboratory facilities.
- Hourly cost of technical service staff time (so you need to estimate how many hours of technician support you have had) – supposing a technician costs £25k per annum (some get paid more and some less but let's take this as a rough estimate) and they work for 48 weeks of the year, 5 days a week, 8 hours a day....work out this cost per hour and multiply by the rough number of hours you think you might have needed.
- Hourly cost of any other lab time that does not fall into the above categories.
- If you have had workshop support for component manufacture please estimate this in. You could ask one of the workshop staff for a rough estimate.
- Cost of materials you have used whether these were already in the lab or ordered in specifically (if the materials/consumables are shared across several students do a rough estimate)
- If you have used specialist software you need to include the cost of the license for one computer. Check with your supervisor how expensive the software was. For CFD for example it costs several thousand pounds for the department to have the licenses.

Including this in the project is designed to help you think about how you begin to cost projects when in industry. You should include the project cost form on the next page in the printed copies of your report.

Title of Project:		
Student:		
Supervisor:		
1. Directly Identifiable Costs:		
a. Items and services bought outside the department:		£
b. Materials etc. obtained from the workshop stores:		£
c. Photocopying and photography costs:		£
d. Others (please specify):		£
e. TOTAL DIRECTLY IDENTIFIABLE COSTS:		£
2. Overheads:		
a. Man hours of staff time (workshop, lab assistance) at £10/hour:		£
b. Computer costs:		£
c. TOTAL OVERHEADS:		£
3. Major Equipment:		
a. Equipment costing over £5000 (please specify). Assuming a three-year lifetime for the equipment, given the capital cost of the equipment and the number of hours used for the project, calculate the depreciation cost:		£
4. TOTAL PROJECT COST (1e + 2c + 3a):		£

PLEASE ATTACH A FULL BREAKDOWN OF COSTS IN EACH CATEGORY.

Signatures:

Supervisor: _____

Student: _____