Department of Electrical and Electronic Engineering
National University of Ireland, Cork

FINAL YEAR PROJECTS HANDBOOK

Guidelines and Regulations
For
Module EE4020 - Project

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1   INTRODUCTION

1.1   Introduction and objectives

The purpose of this booklet is to provide year IV students in the Department of Electrical and Electronic Engineering with practical information and the guidelines, rules, and regulations that apply to Module EE4020 - Project.

The objective of the final year project module is "to provide students with the opportunity to apply their theoretical knowledge to a substantial electrical engineering problem requiring analytical and/or design and/or experimental effort" [1]. The project will give students an opportunity to use many different subjects from the electrical engineering degree, perhaps some long forgotten. It will also enable students to practice and, where necessary, improve their analytical skills in engineering situations where there may not be a single, simple, correct solution. It is the responsibility of each student, as an individual engineer or as part of a team, to pursue the problem and reach the best outcome with the resources and time available. In many cases an insurmountable obstacle may present itself during the course of the project, and some quick lateral thinking may be required to move beyond this and achieve a useful result. The final year project should be a very enjoyable and worthwhile experience, but students will only reap the rewards if the effort is put in.

1.2   Expectations

Module EE4020 is compulsory, and must be passed at the summer examinations. No autumn repeat exists for the final year project - students who fail the project module must repeat the *entire* year for their degree to be awarded. The module runs from the start of Teaching Period 1 at the beginning of the academic year, to the end of Teaching Period 2 just before the Easter recess. The module is worth 15 credits out of a total of 60, i.e. the equivalent of three full lecture courses in the final year, and so a proportionate amount of effort is expected. To ensure that all students have the opportunity to spend time on their project module, irrespective of their other final year module options, 9 hours of the weekly timetable have been set aside *specifically* for final year project work. Attendance for these hours does *not* guarantee a pass mark - students are expected to spend significantly more time than this to achieve a reasonable project grade. Students are also expected to spend additional time on their project when they have spare hours due to their choice of timetabled options.

The final year project is an assessment of performance away from a formal examination, and it is a student's ability in this environment that is often scrutinised by employers. The project will demonstrate a student's work ethic, level of initiative, determination and methods of problem solving, and whether a student is adaptable and able to think laterally when difficulties are encountered. The project also gives an early indication of an engineer's project management skills, as each student is largely responsible for their own programme of work. The project module is effectively a test of general engineering ability - use it wisely.

A student's performance during their final year project is often the only basis of a job reference for an employer. In addition, the external examiner may use a student's final year project report to help decide on borderline degree classifications in the summer examination results.

2   <u>TIMETABLE OF EVENTS</u>

The main events and submission deadlines for final year projects during Teaching Periods 1 and 2 are summarised below in Table I. The exact dates may be subject to minor changes as the year progresses, although any such changes will be displayed on the Year IV notice board well in advance.

The first week of Teaching Period 1 is used to gather information. Allocation of projects is completed during the second week of Teaching Period 1. Typed preliminary reports and logbooks are due in the last week of Teaching Period 1, before the Christmas Recess. Feedback on progress will be given by Friday of the first week back after the Christmas Recess. Seminar presentations and open day demonstrations are given in Teaching Period 2, with the typed final report deadline on the Wednesday of the last week before the Easter Recess.

EVENT	DATE
Allocation of Projects	4:00 p.m. Friday **Week 2, Teaching Period 1**
Submissions to the Workshop	4:00 p.m. Friday **Week 9, Teaching Period 1**
Deadline for Preliminary Reports	4:00 p.m. Monday **Week 12, Teaching Period 1**
Feedback for Teaching Period 1	Friday **Week 1, Teaching Period 2**
Seminar Presentations	Thursday and Friday **Week 5, Teaching Period 2**
Open Day Demonstrations	Thursday and Friday **Week 11, Teaching Period 2**
Deadline for Final Reports	4:00 p.m. Wednesday **Week 12, Teaching Period 2**

Table I: Provisional Timetable of Events

3   <u>ALLOCATION OF FINAL YEAR PROJECTS</u>

The procedure for allocating final year projects is very straightforward, and may be summarised as follows.

At the start of the first week of Teaching Period 1, a booklet of *preliminary* project titles, descriptions, and staff will be distributed to all Year IV students, and a corresponding list of project titles and staff will also be displayed on the Year IV notice board. This will not be a definitive list: staff may decide to run projects other that those that are listed, or may decide not to proceed with a listed project.

Students should first decide whether they would prefer to undertake a project alone, or with a colleague to make up a group of two. All students should then use the first week of Teaching Period 1 to study the project details in the booklet and get information on several suitable projects in different subject areas in case their first preference is allocated to someone else. Many of the project areas overlap considerably, and members of staff may offer projects with very different themes. NO PROJECTS WILL BE ALLOCATED IN THE FIRST WEEK OF TEACHING PERIOD 1. Projects are available within the Department of Electrical and Electronic Engineering, and also the Tyndall Institute. The contact details of staff within the department of Electrical and Electronic Engineering are shown in Section 11.

During the second week of Teaching Period 2, all students/groups must arrange a specific project with a member of academic staff, remembering that each member of staff can take on a limited number of students. Once the assignment of a specific project has been agreed with a member of staff, a Project Allocation Form must be filled out and countersigned by the intended project supervisor. PROJECT ALLOCATION FORMS WILL NOT BE DISTRIBUTED UNTIL THE START OF WEEK 2, TEACHING PERIOD 1. All the project allocation forms must be submitted to the Departmental Operative by 4:00 p.m. Friday Week 2, Teaching Period 1. Each member of staff will support no more than six project students - this is to ensure that the staff workload is evenly distributed such that all students get an adequate level of supervision. Students must not apply pressure to staff to take on additional students. Only ONE project allocation form is to be submitted per project, irrespective of whether an individual or a group undertakes the project.

Students should be aware that some of the projects may be extremely popular - it has proved useful in the past if the class can decide amongst themselves during the first week which projects to apply for. It is also up to the individual members of staff how they allocate projects to students: it may be first come, first served; drawing of lots; group discussion, etc.

Students who are undertaking a project which is sponsored by industry, or a project which is a continuation of their work placement, must tick the relevant box on the allocation form, and get the form countersigned by their academic supervisor. Details of the sponsoring company must also be given, or the allocation will be invalid, and the student or group will be allocated a project left over from the remaining departmental projects after the allocation. Students should be aware that projects run by Tyndall, PEI and TELTEC are *not* to be considered industrially sponsored unless another external company is directly involved.

4   GUIDELINES FOR PROJECTS RELATED TO WORK PLACEMENT ACTIVITIES

Students may have opted to undertake final year projects that are a development of, or closely related to, the work that has been carried out during their placement programme. The following guidelines are intended to ensure that appropriate consideration is given to the issues that may arise in terms of evaluating such project work.

(i)   Evaluation of the work placement is based on supervisor visits, presentations, employers' reports, student logbooks, written reports, and other assignments. The mark assigned is 100 marks, to be included in the final year total of 1640.

(ii)   The final year project carries an allocation of 300 marks and, in the interest of fairness, this allocation must be seen to be completely separate from the marks already allocated for the placement scheme.

(iii)   It follows that the work carried out in the final year project must be entirely separate and distinct from that carried out in the work placement scheme. Accordingly, students are advised that particular attention must be taken to ensure that such placement work does not form part of the final year project submission.

(iv)   When evaluating such final year project reports the work placement report will also be considered and marks adjusted if significant duplication is apparent.

These measures are not intended to discourage students from developing the work carried out during the placement period - indeed such activity is to be encouraged. Rather the measures are intended to ensure that students undertaking new projects are not relatively disadvantaged.

5   PROJECT ASSESSMENT

There is a maximum of 300 marks awarded for the project module, divided as follows:

Preliminary Report and Logbook	15 marks
Student Performance: Teaching Period 1	35 marks

(Feedback of Progress after Teaching Period 1)

Seminar Presentation	30 marks
Open Day	30 marks
Student Performance: Teaching Period 2	40 marks
Final Report and Logbook	150 marks
Total:	**300 marks**

The pass mark in each assessment is 40%. All assessments are compulsory. Any students with a registered disability should identify themselves to the module co-ordinator by email (bill.wright@ucc.ie) before the end of Week 3, Teaching Period 1.

5.1   The Preliminary Report, Plan and Logbook

The preliminary report is effectively a summary of progress at the end of Teaching Period 1, and a plan of the intended work during Teaching Period 2. Students must note that:

- **The Preliminary Report and Logbook must be a separate and individual effort by each student. Duplication of identical material between students is NOT permitted, even for students working together on a joint project.**

- **Text taken from a book, journal article, web page, or other publication, must NOT be copied verbatim, and must be paraphrased individually by each student.**

- **The source of all material, including diagrams, figures or tables must be clearly referenced.**

- **Failure to do so will be interpreted by the examiners as plagiarism and cheating (see Section 9).**

The preliminary report should be at least 20 pages long, and MUST contain the following:

- a brief summary (1 page maximum) of the achievements to date.
- a description of the project, including the main aims and/or objectives.
- an introduction, putting the project into context with other work in the same subject area, incorporating a comprehensive review of relevant literature, including references to books, journal articles, conference proceedings, manuals, and the Internet. Some evidence of use of the library, CD-ROMS, and online databases should be included.
- an *individual project plan* for each student for the intended work during Teaching Period 2, including specific aims, goals and timescales, and a *clear division of labour* for students working together on a joint project. This may include a Gantt chart or similar if desired.
- A weekly logbook for Teaching Period 1, as an appendix to the preliminary report. The logbook should be a minimum of one-half page per week, and should summarise the actual achievements of each student every week.

Students are advised to perform an *extensive* search of *all* relevant sources as early on in the project as possible. Journal articles and other items not kept in the Boole Library may be ordered on inter-library loan, but such items can take several weeks to arrive. In the past, students have struggled needlessly with a project, only discovering at the very end how they should have proceeded after *eventually* reviewing the relevant literature for the final report. There are several on-line web-based databases which may be used; details of how to access these may be found on the library web pages. Students are advised to join relevant professional societies such as the IEEE for full-text online access to journal publications, as student memberships are often very reasonable.

Each student must submit TWO COPIES of their preliminary report, one to the Departmental Operative and one to their project supervisor, by 4:00 p.m. Monday of Week 12, Teaching Period 1, i.e.: the last Monday before the Christmas recess. Students must ensure they obtain a clearly stamped and dated receipt, as the penalty for late submission is 10% per week or part thereof, and this will be rigorously enforced. Blank submission receipts are given in Appendix 1. Printing delays, binding delays or disk/network failure are not valid excuses for late submission - a Medical Certificate must accompany late reports. Students are advised to keep their half of the receipt in a safe place, along with a backup copy of their project report (e.g. on computer diskette or CD). The receipt is the only proof of submission accepted by the department in the event of any dispute.

5.2   Assessment of Student Performance during Teaching Period 1

All project supervisors assess the individual performance of each of their project students during Teaching Period 1, and give marks for organisation and planning, effort and achievement, and initiative and originality during the project, out of a maximum of 35 marks.

It is therefore imperative that students start work on their project immediately, and maintain regular contact with their project supervisor. The following form part of the Assessment of Student Performance:

- Students *must* see their project supervisors EVERY WEEK, on Tuesdays between 3pm and 4pm. This hour has been timetabled specifically for this purpose. Failure to attend these and any other progress meetings arranged by the project supervisor will lead to a reduction in marks.
- Students *must* keep a *laboratory notebook*, in which *all* project information should be recorded. The project supervisor should sign the laboratory notebook every week at the progress meeting. Failure to keep a satisfactory laboratory notebook will lead to a reduction in marks. Students are advised to keep records of everything, failures as well as successes, to account for their time and also to avoid repeating mistakes.
- Students *must* email a *weekly logbook* to their supervisor before 5pm FRIDAY every week. The weekly logbook should be a brief summary of project progress and achievements for each week, plus an indication of the work planned for the following week. Failure to email the logbook to the supervisor will lead to a reduction in marks.
- Students should note that the laboratory notebook and logbook are SEPARATE documents – the notebook is a record of all daily work, the logbook is a brief weekly summary of achievements and planned work for the next week.

Students are expected to take the initiative in their final year project, and not to seek out their supervisor at every available opportunity. Self-motivation and individual effort are aspects of project work that are just as important as getting results.

5.3   Feedback of Progress after Teaching Period 1

Students will be informed by their project supervisor of their marks for their performance and preliminary report by Friday, Week 1, Teaching Period 2. Students must arrange to meet their project supervisor after receiving their marks to discuss their performance and gain additional feedback. One copy of the preliminary report will also be returned to each student with comments.

STUDENTS WHO DO NOT OBTAIN A PASS MARK FOR THEIR TEACHING PERIOD 1 ASSESSMENTS WILL RECEIVE A WRITTEN WARNING FROM THE MODULE COORDINATOR, AND MAY ALSO BE INTERVIEWED BY THE HEAD OF DEPARTMENT.

Students who have not received their marks from their project supervisor by Monday, Week 2, Teaching Period 2, should contact the module coordinator.

5.4   The Seminar Presentation

Each project student must give a short seminar presentation about their project to a panel of three academic staff and an audience of their peers. The seminars will take place at the end of Week 5, Teaching Period 2, and there are usually several parallel sessions. A list of seminar times and locations will be posted on the Year IV notice board nearer the event. All students giving seminars must be present at the START of the relevant session and must stay for the ENTIRE session to avoid interrupting other speakers. A mark out of 30 is given to each project student for their seminar presentation.

One-person projects are allocated 15 minutes for the presentation, and two-person projects are allocated 20 minutes. These times MUST include AT LEAST three minutes at the end for questions from the judging panel. Students should note that their project supervisor will not be on the judging panel. The seminar should contain the following:

- a *brief* introduction to the subject area, putting the current work into context
- an outline of the main project aims and goals
- any relevant theory
- the work achieved to date
- problems encountered and how they were overcome
- work remaining or future work

Only overhead transparency projectors will be provided; students must provide and prepare their own overhead transparencies.

The quality of the presentation will be assessed, and students are strongly advised to practice their presentations in advance, and familiarise themselves with the projection equipment. There is no substitute for a well-delivered, well-rehearsed presentation. Lack of preparation is easy to spot, and will incur heavy penalties.

Students on a joint project are advised to plan the presentation carefully and divide the seminar as equally as possible between the two speakers, for example either as two 8 or 9 minute presentations one after the other, or each student speaking alternately for one or two minutes. Repetition of material between speakers should be avoided. Some other general guidelines include:

- students should use about one transparency per minute
- students should use as large a font as possible, ensure that there is a good contrast between text and background colours, and avoid using complex background graphics or patterns
- complex formulae, long equations, and very detailed diagrams or figures may prove difficult to read and interpret
- clearly labelled block diagrams and bullet points or lists of text should be used where possible. Long continuous paragraphs or blocks of text should be avoided
- slides or transparencies should be as uncluttered as possible - it is better to have five or six main points on each slide, which the audience can read while the speaker explains each one in greater detail. The information on each slide should act as a prompt to remind the speaker what to say.

5.5   The Open Day

The Open Day is a practical demonstration of each final year project to a wide audience of staff and students - even the President of the University has been known to attend on occasion. The Open Day will be held at the end of Week 11, Teaching Period 2 with a single day for all projects, irrespective of their location. This is to allow as many people as possible to view each project.

All project students must ensure that the exact location of their Open Day presentation is clearly signposted from the main entrance or foyer in the relevant building. All project students must wear name badges.

Each project group should exhibit a poster display consisting of the main aim(s) of the project, any relevant theory, and sample results. A working demonstration of any apparatus or computer simulation must also be included. Each student will be assessed individually on the Open Day by the same panel of academic staff from the seminar presentations, and an individual mark out of 30 will be awarded to each student. Students should be prepared to answer a wide range of questions regarding the project. The Open Day gives each student an opportunity to demonstrate their individual depth of knowledge and understanding of the project - very often questions raised at the seminars will be re-visited in greater detail.

Students are reminded that the Open Day is effectively the deadline for all practical aspects of their project, and every effort should be made to ensure that any apparatus is in good working order for the occasion. Students should try and anticipate any potential problems and ensure that replacement components or tools for emergency minor repairs are available. For example, if a particular diode failed repeatedly during circuit development, there is a good chance that it will fail again during the Open Day!

Students should remember that the Open Day is only one small part of the overall project assessment – if things do not go quite as planned during the Open Day, it will not have a huge effect on the overall project mark.

5.6   Assessment of Student Performance during Teaching Period 2

All project supervisors also assess the individual performance of each of their project students for Teaching Period 2, and again give marks for organisation and planning, effort and achievement, and initiative and originality during the project. A mark out of 40 will be awarded based on the student's performance throughout Teaching Period 2, and will then be combined with the mark from Teaching Period 1 to give an overall mark for student performance out of 75.

Students must continue to meet with their project supervisors between 3pm and 4pm every Tuesday afternoon during Teaching Period 2, email their weekly logbook to their supervisor by 5pm every Friday, and keep their laboratory notebook up to date.

5.7   The Final Report and Logbook

The assessment of the final report carries half the marks for the entire project - up to 150 out of 300. All students must note the following:

- **The COMPLETE Logbook covering BOTH teaching periods must be submitted.**

- **The Final Report and Logbook must be separate and individual efforts by each student. Duplication of identical material between students is NOT permitted, even for students working together on a joint project.**

- **Text taken from a book, journal article, web page, or other publication, must NOT be copied verbatim, and must be individually paraphrased by each student.**

- **The source of all material, including diagrams, figures or tables, must be clearly referenced.**

- **Failure to do so will be interpreted by the examiners as plagiarism and cheating (see Section 9).**

However, students may include details of their partner's work in their own project report, provided that the relevant sections of the report are adequately paraphrased in each case, and that the work is acknowledged to the project partner at each occurrence.

Students should take great care to acknowledge *any* work they did not undertake themselves - failure to do so could be interpreted by the examiners as cheating (see Section 9).

The submission deadline for the final report is 4:00 p.m. on Wednesday, Week 12, Teaching Period 2, just before the Easter Recess, and will be well advertised at the time. The penalty for late submission of reports is 10% per week or part thereof, and this penalty will be *rigorously* enforced. Students are reminded that printing delays, binding delays, disk/network/power failures or similar are NOT valid excuses for late submission. A valid Medical Certificate must accompany late reports.

Each student must submit TWO copies of their report, one to the Departmental Operative, and one to their project supervisor. Students must obtain a stamped receipt from the Departmental Operative clearly showing the date of submission, as this is the only evidence accepted by the department in the event of any dispute. A submission receipt is included in Appendix 2. Students are advised to keep their half of the receipt in a safe place, along with a

backup copy of their project report (e.g. on computer diskette or CD). Students should also keep a paper copy of their report for their own use, for example, during job interviews or the visit by the external examiner.

One copy of the report will be marked by the project supervisor, the other by a second assessor to ensure fairness. Marks are awarded for the following:

- presentation and logical development of the report;
- introduction, background and theory;
- quality of content;
- logbook

These marks are taken from both assessors, and then combined to give a total mark out of 150. In the event of a large difference between the marks awarded by the supervisor and those of the second assessor, a third assessor will be used.

The Final Report **MUST** contain the following:

- Header Page, consisting of (in the order given below):
    - "Department of Electrical and Electronic Engineering"
    - "Module EE4020 - Project"
    - "Final Report"
    - Project Title
    - Author's Name and Student Number
    - Project Partner's Name and Student Number
    - Supervisor's Name
    - Date of Submission
- Declaration (see below)
- Summary (1 page maximum)
- Acknowledgements
- Contents, including page numbers
- List of Figures and Tables
- Notations
- Main body of the Report

The declaration page must be signed and dated, and must consist of the following text:

> "This report was written entirely by the author, except where stated otherwise. The source of any material not created by the author has been clearly referenced. The work described in this report was conducted by the author, except where stated otherwise."

The one page summary is mandatory and must be included at the start of the report after the declaration. Writing a concise summary that accurately and succinctly tells the reader what is contained in the report is an important skill that every engineer should acquire. The summary should state what was achieved in the project, and give a brief overview of any results. A summary or abstract may be the only part of a paper or report that is read - it should contain enough information to inform the reader that the rest of the report is relevant.

The table of contents should include all section headings and *must* include page numbers. Many word processors have the facility to generate the table of contents automatically.

All figures and tables should be individually numbered and captioned where they appear in the text, e.g.: 'Figure 2.3: Plot of v_{in} against i_{out} for different temperatures' or 'Table 3.II: Properties of typical dielectric materials'. This information should also be included at the start of the report in the List of Figures and Tables. Page numbers may also be included in the list if desired.

The main body of the report should consist of the following sections, as appropriate:

- Introduction and objectives
- Background information and previous work in the subject area (referenced)
- Theoretical aspects/modelling/simulation/strategies
- Experimental techniques/methods/apparatus/rationale
- Results
- Discussion of results/critical analysis/comparison with other work
- Future work
- Conclusions
- References
- Appendices (equations/program code/equipment specifications)
- Logbook (for Teaching Periods 1 and 2)

It is essential that students write their introduction in such a way that a reader with a scientific background, but who may be unfamiliar with the subject area, can understand the material. Therefore the introduction should start in general terms, explaining basic concepts and principles relevant to the project in sufficient detail so that the main body of the work can be understood.

The conclusions section should review the material presented in the main body of the report, and effectively remind the reader of all the achievements and the salient points from the discussion and future work. No new material should be presented in the conclusions, neither should it be a personal appraisal of 'how well the project went'.

References must be listed in a separate section at the end of the report, and corresponding items referred to in square parentheses, e.g. [12], [21-26] at the relevant point in the text. The recommended reference style for papers is: author(s), article title, periodical (in italics), volume number, inclusive page numbers; year of publication. The recommended reference style for books is: author(s), book title (in italics), publisher, location, year of publication, chapter or page numbers. Web addresses should be listed in full (i.e. the *exact* page containing the referenced material), along with the date they were last accessed.

For example:
[1] E. N. Ivanov, M. E. Tobar and R. A. Woode, 'A study of noise phenomena in microwave components using an advanced noise measurement system', *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control,* Vol. 44, pp. 161-163, 1997.
[2] S. Wolfram, *Mathematica – A System for Doing Mathematics by Computer*, 2nd Edition, Addison-Wesley, Redwood City, California, 1991, Ch. 2.
[3] http://electronics.howstuffworks.com/capacitor.htm, accessed 15/9/05

The maximum page limit for the final report is 50 pages excluding appendices, and 80 pages including appendices. The report and any appendices including the logbook must be bound together in a single volume. Reports exceeding the page limits may lose marks.

Some additional report guidelines are:

- Reports must be typed and professionally bound with a soft cover
- Permitted fonts are Times Roman, Courier or Arial, size 11 point or 12 point
- Line spacing must be 1.5
- Top, bottom and right margins must be 1 inch (2.54 cm)
- The left margin must be 1.5 inches (3.81 cm), to allow for binding
- All pages must be sequentially numbered
- All figures, tables and equations must be individually numbered, and referred to explicitly in the text (e.g.: "The results shown overleaf in Figure 2.3(a)....")
- The report should be written in the past tense, passive voice, i.e. do not use "I", "we", "our", or "my" anywhere in the text. Use phrases such as "The experiment was done…" rather than "We did the experiment…".

6   USE OF DEPARTMENTAL FACILITIES

Each final year project is allocated a limited budget of €190 per student for consumable items such as electronic components and mechanical materials. STUDENTS MUST NOT EXCEED THE ALLOWED BUDGET. Students should make every effort to locate several sources for any items required, and get the best value for money. In rare circumstances an expensive item may be required that exceeds the total project budget - this may be permitted at the discretion of the Head of Department.

6.1   Mechanical Workshop

The department has a mechanical workshop well equipped with a variety of manufacturing facilities. The workshop also has a large number of standard materials and fasteners in stock, and many others may be quickly ordered.

Students must first discuss their preliminary designs with their supervisors and the technicians in the workshop, who will be able to offer advice and suggest the best (and often quickest) method of manufacture. Many materials and fixings come in standard sizes - using these as much as possible will speed up production. Students should not rely on the workshop staff to design apparatus for them.

Students must then submit clear, annotated drawings to the workshop before **4:00 p.m. Friday, Week 9, Teaching Period 1**. In order to prevent further delays in the workshop, students should ensure that drawings contain as much information as possible. All linear and angular dimensions should be clearly labelled, and hole diameters, screw/bolt sizes and materials should also be specified. Indicate on all drawings any dimensions that are not critical, this allows for some flexibility in their manufacture.

Major items are manufactured in the workshops on a first come, first served basis, and therefore workshop requests submitted after the Week 9 deadline will be given a low priority.

However, small workshop jobs such as hole drilling may be completed on an *ad hoc* basis throughout Teaching Periods 1 and 2.

6.2   Electronic Components

A large number of different electronic components are kept in stock in the Development Laboratory. Any other components should be ordered through Mr. Olan Dwyer. Students should make every effort to source any components themselves first, using the catalogues or websites for companies such as Radionics, Farnell and Maplin as required.

6.3   Electrical Equipment

The majority of equipment required by final year projects should already be available in the individual laboratories belonging to the project supervisors. There is also a supply of equipment such as digital oscilloscopes, power supplies, signal/function generators and multimeters available in the Development Laboratory. ITEMS OF EQUIPMENT MUST NOT BE REMOVED FROM THE DEVELOPMENT LABORATORY. This equipment cannot form an essential part of any Open Day demonstration, as no guarantee can be given that the necessary equipment will be available on the day.

STUDENTS MUST NOT BORROW ANY ITEMS OF EQUIPMENT FROM ANY LABORATORY WITHOUT EXPRESS PERMISSION FROM MEMBERS OF STAFF.

ITEMS OF EQUIPMENT MUST NOT BE MOVED BETWEEN LABORATORIES.

Most equipment is NOT exclusively for final year projects; many items are also used by staff, postgraduates, and other undergraduates.

6.4   Computing Facilities

The computer facilities in the department are managed by Mr. Diarmuid Ó Ríordáin, who is the Faculty Computer Systems Administrator, and Mr. Maurice O'Connor.

Only fully licensed software is installed on the laboratory systems. No extra software will be installed on these systems for individual projects unless compelling cases are made.

Disk quotas are in operation on users' Home Directories - these are backed up to tape on a weekly basis. Local machines have space available on D:\Local - this storage is not secure, will not be backed up and may be erased periodically, albeit with prior notification.

Print quotas are also in operation - for more details refer to the notice boards. While every effort is made to maintain the printing service in full working order, this cannot be assumed and will not be accepted as an excuse for late submission of reports. It is the responsibility of each student to ensure that any report is printed out in good time.

Machines in the CAD Laboratory and the IT Laboratory are for use by *all* undergraduate students and cannot be "reserved" for individual students or projects. Systems will be automatically logged off after 20 minutes of inactivity - any unsaved material will be lost.

Formal undergraduate laboratories take precedence over all final year projects as regards machine availability.

Computer stations are not to be regarded as "full research" stations, i.e. stations should not be cluttered up with full sets of manuals etc. while work is underway - just bring what is needed for that particular work session.

7   SAFETY IN LABORATORIES

Students should familiarise themselves with the Departmental Safety Statement, and must adhere to any Health and Safety regulations which apply to any laboratories in which their final year project work will be undertaken. Students should also familiarise themselves thoroughly with any equipment that will be used as part of their final year project, and use it in a safe and responsible manner. If in doubt - ask!

STUDENTS ARE REMINDED THAT EATING AND/OR DRINKING IS PROHIBITED IN ALL LABORATORIES

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8   PRIZES AND OTHER AWARDS

There are some additional incentives and prizes available for Final Year Projects:

8.1   The Graduates' Association Awards in Engineering

This is an annual award from the college to the Best BE Project in Electrical Engineering and Microelectronics, and is currently valued at €400.

8.2   Siemens Young Engineer of the Year Award

This prize is sponsored by Siemens, and administered by the IEI (Institute of Engineers of Ireland). This is a national competition between undergraduates from different Irish colleges and is extremely prestigious. Only one project group from the whole faculty may apply, this group is decided on a competitive basis between the different engineering departments. Entries consist of a technical paper to be sent to the IEI by a deadline in April. The competition final and award ceremony is held in Dublin in June. The first prize is €2,000 together with a trophy and a further prize should the winner decide to continue with post-graduate studies in engineering in one of the participating Colleges.

9 SUSPECTED CHEATING

The attention of all students is brought to the Regulations in Relation to Suspected Cheating as presented in Section 18 of "Guide to Examinations for Academic Staff & Students" issued by the Registrar's Office (pp. 19-22) [2]

Paragraph 18.1 defines cheating as:

> "CHEATING MEANS AN ATTEMPT TO BENEFIT ONESELF, OR ANOTHER, BY DECEIT OR FRAUD OR OTHER BREACH OF THE EXAMINATION REGULATIONS. THIS SHALL INCLUDE PERSONATION AND PLAGIARISM. AS REGARDS PLAGIARISM A SIGNIFICANT AMOUNT OF UNACKNOWLEDGED COPYING SHALL BE DEEMED TO CONSTITUTE PRIMA FACIE EVIDENCE OF DELIBERATION."

Students should also familiarise themselves with Section 18.6: Assessments not undertaken as part of Invigilated Examinations [2]

All students must therefore ensure that any work submitted as part of their final year project is an individual effort, as mentioned previously in Sections 5.1 and 5.5

Any report or logbook must be a separate and individual effort by each student. Duplication of identical material is NOT permitted, even for students working together on a joint project.

Text taken from a book, journal article, web page, or other publication, must NOT be copied verbatim, and must be paraphrased by each student individually.

The source of all material, including diagrams, figures or tables, must be clearly referenced.

Failure to do so will be interpreted by the examiners as plagiarism and cheating.

However, students may include details of their partner's work in their own project report, provided that the relevant sections of the report are adequately paraphrased in each case, and that the work is acknowledged to the project partner at each occurrence.

Information taken from a common source and used by more than one student, should be paraphrased separately by each student using it, and the source of the material clearly referenced. Figures, tables and diagrams reproduced from other texts should also be referenced.

10 REFERENCES

[1] *Book of Modules 2006/2007*, from: http://www.ucc.ie/academic/modules/index.html, accessed 31/7/2006.
[2] *Guide to Examinations for Academic Staff and Students*, Registrar's Office, UCC, March 2006, from: http://www.ucc.ie/admin/registrar/examsrec/guideexams-covpage.shtml, accessed 31/7/2006.

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12   <u>APPENDICES</u>

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12.1   Appendix 1 – Receipts for Submission of Assessed Work (x2)

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Department of Electrical and Electronic Engineering

Receipt for Submission of Assessed Work

Student Name:

Year of Study (I/II/III/IV): **IV**   Module Code: **EE4020**

Module Title: **FINAL YEAR PROJECT**

Project Supervisor:

Title of Assessed Work:

Date submitted: Submission Deadline:

BOTH HALVES of this sheet must be completed in ink. Ensure that this receipt has a valid date stamp on both halves with the date clearly visible.

One half of this sheet will be returned as an official receipt for the work submitted. The other half must be attached firmly to the report in a binder or using staples.

This receipt must be kept safely as the Department will accept NO OTHER EVIDENCE OF SUBMISSION in the event of any dispute

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Department of Electrical and Electronic Engineering

Receipt for Submission of Assessed Work

Student Name:

Year of Study (I/II/III/IV): **IV**   Module Code: **EE4020**

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