

**MEng PROJECT GUIDELINES**

***Master of Engineering in  
Computer and Communication Systems***

***Master of Engineering in  
Information Networks and Security***

***Master of Engineering in  
Computer Engineering***

***2016/2017***

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## **MENG PROJECT**

The MEng project is undertaken throughout the full calendar year and it is expected that progress will be made in the Autumn and Spring semesters, although the majority of the work will be undertaken in the Summer semester (June to August). The project is intended to give a student the chance to research and develop a topic in depth and to apply his/her theoretical knowledge to a practical situation. The student will learn to direct their own work, to be critical of their own methods, to conduct detailed analysis, to research and develop ideas, to implement and undertake experiments, and to report their results and reasoning.

The MEng project is very important, not only because of the contribution to your QCA and final award, but also because External Examiners, and potential employers or research postgraduate supervisors, will often explore your project work in-depth. It is a significant component of your course that demonstrates your ability to synthesise relevant existing material in your chosen specialisation and to develop new ideas and new skills to realise the project.

## **SUPERVISION**

The project supervisor is responsible for providing satisfactory guidance for the project. A set of important milestones are given in Appendix 1. A student is expected to set aside the necessary time to work on the project and must be available for periodic consultation with the supervisor.

There is a nominal budget to support the project, and software and hardware supplies can be ordered subject to approval, see Appendix 2 for details.

A panel of assessors are assigned who will evaluate and mark the project. Reports and presentations will be made available to the panel which will include the project supervisor.

## **PROJECT MANAGEMENT**

The work expected and deliverables are outlined below for the Autumn, Spring and Summer semesters. It is very important that you work consistently and steadily throughout the whole year and liaise with your supervisor regularly to ensure your performance is optimised. Time management is critical. It is very tempting to defer all the work to the summer. However, deferral may result in limited progress and hence there are a set of milestones throughout the year. For best results: work steadily and consistently; liaise with your supervisor regularly and as early as possible identify any special needs for software, equipment, facilities or components.

### **(a) Autumn Semester**

During this semester the student should develop a clear understanding of the project objectives, become familiar with the theoretical aspects of the project, and study the background literature. This will take the form of a literature review of published research, and include text books, previous project reports or theses. Your supervisor should be able to guide you on what's required.

The student must submit an autumn project report and should consult the supervisor to agree the exact requirements. The autumn report and autumn presentation will contribute to the overall assessment. The recorded marks awarded by the panel will be worth **15%** of the total marks and be used in assigning final project grades. The marks and feedback will be available at the latest by end of the Autumn Semester.

### **Submitting the Autumn report**

The submission date is 16h00 on **Friday of Teaching Week 10**. This is a hard deadline.

- The outline content and format for this interim report is outlined in Appendix 3.
- Submit a printed copy of the report to the Departmental Co-ordinator's Office (D2-031).
- Submit the electronic copy of the final report in pdf format to your Sulis project module folder, e.g. MEng INS Module – EE9981 and MEng CCS & CE Module – EE9971 named as follows, where **XY** are the initials of your supervisor and **xxxxxxxx** your id number:

Autumn\_**XY**\_**xxxxxxxx**\_FirstName\_Surname.pdf

### **Autumn Presentation**

A 15 minute presentation will take place during **Teaching Week 11** of Autumn semester. Details of the precise times and locations for these will be posted on the ECE student website.

- In the presentation the student may use up to 6 slides and it should take no longer than 10 minutes to allow for questions. The quality of the presentation should be of a professional standard.

The Peer-Supported Learning Centre (Room C2-061) organises a short seminar on ‘Technical Report Writing’ in the Autumn Semester, to assist students in planning for and writing their reports. All MEng students are recommended to attend this seminar.

### **(b) Spring Semester**

In teaching week 7 of the Semester, the student must submit an updated report which should introduce and cover the objectives of the project, present work to date, and give a plan of work with estimated completion dates for each major task, against which the student's performance can be assessed.

This part of the report will be presented to a panel and will be worth **15%** of the total marks when assigning final grades. All major risks should be identified and assessed prior to presentation.

Laboratories may be accessible to students during the break between the Autumn and Spring Semesters during normal office hours. Students should consult their supervisors with requirements in a timely manner.

### **Submitting the Spring report**

The submission date is 16h00 on Friday of **Teaching Week 7**. This is a hard deadline.

- The outline content and format for this interim report is outlined in Appendix 3.
- Submit a printed copy of the report to the Departmental Co-ordinator's Office (D2-031).
- Submit the electronic copy of the final report in pdf format to your Sulis project module folder, e.g. MEng INS Module – EE9981 and MEng CCS & CE Module – EE9971 named as follows, where XY are the initials of your supervisor and xxxxxxxx your id number:

Spring\_XY\_XXXXXXXX\_FirstName\_Surname.pdf

### **Spring Presentation**

A 20 minute presentation will take place during **Teaching Week 8** of Spring semester. Details of the precise times and locations for these will be posted on the ECE student website.

- In the presentation the student may use up to 6 slides and it should take no longer than 10 minutes to allow for questions. The quality of the presentation should be of a professional standard.

### (c) Summer Semester

In this semester the project will be completed. If a project requires any specialist items e.g. components, tools, software etc. it is the responsibility of the student to ensure that such components are ordered early to ensure timely delivery of such items. Refer to Appendix 2 for ordering supplies.

The student must make every attempt to keep to the agreed project schedule. Any significant deviation from this schedule must be discussed with the supervisor. It is probable that some departures from the agreed project plan will occur. Such departures must be justified in the report as part of the discussions on specification, design and performance appraisal.

The final assessment of the project worth **70%** of marks will be based largely on the MEng project report and a presentation/ bench demonstration to a panel of assessors including your supervisor during the final week of summer semester. The final MEng project report should be structured and typed to the guidelines outlined in Appendix 4, unless the project supervisor specifically defines an alternative.

It is really important that the references are presented professionally, see Appendix 5, as they form an important part of the review and assessment process. No grade will be awarded until any outstanding support material belonging to the University such as hardware components, software, books etc. are returned to the supervisor or to the relevant technician, library assistant etc.

Details of precise times for the presentations will be posted on the ECE web page. The location will be agreed in advance with the project supervisor. The exact nature of this presentation/demonstration will depend on the detailed specification of the project and this should be discussed with the project supervisor in advance of the presentation/demonstration. Where students have undertaken an industry based project the supervisor can request that a demonstration take place in the relevant company, if the nature of the project warrants this.

#### **Submitting the final project deliverables**

The final submission date for all the project deliverables is 16h00 on **Friday** before the summer exam week (see Appendix 1). This is a hard deadline.

- Submit a printed soft bound with a clear transparent cover of the report to the Departmental Co-ordinator's Office (D2-031)
- Submit the electronic copy of the final report in pdf format to your Sulis project module folder, e.g. MEng INS Module – EE9981 and MEng CCS & CE Module – EE9971 named as follows, where **XY** are the initials of your supervisor and **xxxxxxxx** your id number:

Report\_**XY\_XXXXXXXX**\_FirstName\_Surname.pdf

- Submit all auxiliary supporting material e.g. software, databases, data gathered etc. to Sulis, compressed in a **zip** file named as follows:

Aux\_**XY\_XXXXXXXX**\_FirstName\_Surname.zip

- You are also required to email all the above materials directly to your FYP supervisor
- Return any equipment used, circuits etc. after the final presentation.

## **EXTENSIONS AND PENALTIES**

It is unlikely given the extended duration of the project that the need for a final submission extension will arise. If it does, please contact your supervisor as early as possible.

It is not acceptable to run out of time at the end. Late or incomplete projects will be penalised up to and including deferring the submission of the report and presentations until the next academic year which will delay graduation and incur additional fees.

However, students may apply for an extension in exceptional cases (in line with I-grades, i.e. illness, family bereavement etc.) as follows:

- Students must make a formal written application to the course director.
- Students are expected where possible to present all work to their allotted panel in their assigned presentation.
- If a student fails to present without approval from the course director they will be requested to repeat the project in the next academic year with no extension granted and incur the penalty of fees.
- The MEng Course Board will convene to review all applications, date and time TBC. After the review of applications, students will be informed of the outcome.

It is the supervisor's responsibility to arrange a meeting of the panel members for a re-scheduled presentation.

## **APPENDIX 1: Important Milestones and Marks Distribution**

### **Milestones**

<b>Milestone</b>	<b>Semester: Teaching Week</b>	<b>Description</b>
1.	<b>Autumn: Week 3</b> 21 Sep 2016, 16:00	<b>List of projects</b> will be available
2.	<b>Autumn: Week 4</b> 28 Sep 2016, 16:00	<b>Project Selection.</b> Select 1 <sup>st</sup> to 10 <sup>th</sup> choice and submit to ECE department Co-ordinator's Office D2031. <sup>1</sup>
3.	<b>Autumn: Week 4</b> 30 Sep 2016, 17:00	<b>Project Allocation</b> will be communicated by email & posted to <a href="http://www.ecemasters.ul.ie">www.ecemasters.ul.ie</a> .
4.	<b>Autumn, Week 8</b>	<b>Technical Report Writing Seminar</b> in Peer Supported Learning Centre, (Date & Venue to be announced)
5.	<b>Autumn: Week 10</b> 11 Nov 2016, 16:00	<b>Autumn report</b> Submit pdf to Sulis and a printed copy to the Department Co-ordinator's Office (D2-031).
6.	<b>Autumn: Week 11</b>	Presentation to Panel, (Date & Venue to be announced)
7.	<b>Spring: Week 7</b> 10 Mar 2017, 16:00	<b>Spring report</b> Submit pdf to Sulis and a printed copy to the Department Co-ordinator's Office (D2-031).
8.	<b>Spring: Week 8</b>	Presentation to Panel, (Date & Venue to be announced)
9.	<b>Summer Semester</b>	<b>Progress project</b> Send regular progress updates and hold meetings (agree schedule with supervisor).
10.	<b>Summer: Pre Exam Week</b> 18 Aug 2017, 16:00	<b>Final MEng Project report.</b> Submit pdf to Sulis and a hard backed printed copy to the Department Co-ordinator's Office (D2-031).

### **Marks Distribution**

<b>Description</b>	<b>Marks Distribution</b>
<b>Autumn Report/Presentation</b>	<b>15%</b>
<b>Spring Report/Presentation</b>	<b>15%</b>
<b>Final MEng Project report and Presentation/Demonstration</b>	<b>70%</b>

<sup>1</sup> Random allocation will be used if multiple students select the same project. Students are encouraged to come up with own project and discuss with a potential supervisor (known as a home brew).

## **APPENDIX 2: MEng Budget and Ordering Supplies**

There is a limited project fund which supports buying components, kits or specialised software for your project, but only if necessary and with the prior agreement of your supervisor.

### **MEng Component ordering Procedure.**

When ordering components for use in the M.Eng. projects, E&CE students should first check to see if the components are available in either Farnell or Radionics.

The websites are  [www.farnell.com/ie](http://www.farnell.com/ie) and **RADIONICS**  
[www.radionics.ie](http://www.radionics.ie)

If the components are available in either of these suppliers the student should e-mail the following information to the ECE Stores via [jimmy.osullivan@ul.ie](mailto:jimmy.osullivan@ul.ie) and CC their project supervisor also.

- The Supplier (Radionics or Farnell)
- Order code,
- A brief description,
- Quantity
- The Price per component.
- Total Price of order

The order will be placed with the next order to the supplier and should arrive for collection in Stores via Jimmy O'Sullivan (B2-011) within 2 to 3 working days.

### **Ordering from Alternative Suppliers**

If a student has to order components from any other supplier, the student must first get approval from their supervisor and Stores before ordering. If the component is within the allocated budget, stores will reimburse the cost of the order to the student. Receipts will need to be presented for this reimbursement process.

**Upon reimbursement, the E&CE department becomes the owner of the components, and accordingly these components are expected to be returned to stores after the MEng presentations.**

### **APPENDIX 3: Format of Autumn and Spring Reports**

The interim Autumn and Spring reports should be typed, font size 12 Times New Roman, 1.5 line spacing. The printed version can be single or double sided and presented in a suitable folder. The report length is typically between 15 and 20 pages, but the supervisor can advise of exact requirements.

#### **Sections of the Report:**

**1. Front title sheet**

Include the following information:

Name, I.D. number, Supervisor's Name, Course Followed, Year, Department, Title of Project.

**2. Introduction and report outline**

Clearly documents the project aims and objectives. Includes a brief outline of the report.

**3. Literature survey**

Review of the literature and the background to the work. Identify similar projects.

**4. Theory**

Present the initial analytical and technical theoretical aspects of the work, if appropriate.

**5. High level design**

If available, include some high level designs, describing hardware, software or process related blocks, as appropriate for the project.

**6. Detailed action plan**

This can be in the form of a Gantt chart for the project, in particular showing all the major tasks and their estimated start date, end date and duration in days.

**7. Discussion**

A short section discussing the progress to date, any arising challenges and identified risks.

**8. Requirements of facilities and materials.**

**9. References and sources of information.**

## **APPENDIX 4: Format of the MEng Final Report**

The MEng final report comprises a double sided, typed soft bound document of approximately 60 to 80 pages of main text. Only in exceptional cases can this limit be exceeded and requires supervisors authorisation. Exceeding the limit may adversely affect the project grade awarded.

The report should state clearly what the student has achieved by unambiguously indicating the student's contribution and information gained from other sources, with references given.

### **Sections of the Report:**

#### **1. Front title sheet**

Include the following information:

Name, I.D. number, Supervisor's Name, Course Followed, Year, Department, Title of Project.

#### **2. An optional title page**

Picture/Graphic representing project, Title of Project, Name, I.D. number, year.

#### **3. A single page abstract**

#### **4. The table of contents**

Follow with a List of Figures, List of Tables if appropriate.

#### **5. Introduction and Outline**

Clearly state the objectives of the project and may include material from the report submitted in the Autumn semester. Include an outline of the rest of report.

#### **6. A number of core chapters which might include:**

Literature Review (of Similar Work)

Analytical Background,

Requirements Analysis,

Specification and Design,

Implementation,

Testing,

Results including measurements and facts about performance

#### **7. Discussion of results**

#### **8. Conclusion**

Summarise how the objectives were met. Propose future work related to project.

#### **9. References**

#### **10. Acknowledgements**

#### **11. Appendices**

Normally only copies of data sheets of unusual devices should be included in the report.

Discuss the inclusion of code listings etc. with your supervisor.

### **General comments**

**Typing:** The report should be typed on double sided A4 paper in Times New Roman, font size 12, 1.5 line spacing, with 2.5cm margins at top, bottom, left and right hand sides.

**Style:** The style of writing should be formal and impersonal, but attempting to interest a technically aware reader. Very detailed discussion of circuits, programs, software or intricate derivation of analytical results should be included in appendices.

**References:** References should acknowledge the contribution of others and indicate the level of awareness of students of work undertaken in his chosen field. More details are on the next page.

**Acknowledgements:** should thank contributors to the progress of the project: supervisors, technicians, typist and others.

**Binding:** The project report should be soft bound with a clear transparent cover.

## **APPENDIX 5: Citations and References**

The *IEEE citation style* (see <http://www.ieee.org/documents/ieeecitationref.pdf>) for references should be used throughout the report. When referring to a reference within the text of the document, the reference number should be put in square brackets. For example:

[1]  
[2], [3]  
[4]–[7]

For the references used, the *IEEE citation style* [1], [2] identifies the author(s), the source and the date of publication in a specific format according to the type of publication the reference appears in. The types of publication with their own referencing style are:

1. Books:
  - a. Published books.
  - b. Handbooks.
  - c. Reports.
2. Conference technical articles:
  - a. Basic format.
  - b. For an electronic conference article when there are no page numbers.
  - c. For an unpublished paper presented at a conference.
3. Online sources:
  - a. Online source using a Digital Object Identifier (DOI).
  - b. FTP.
  - c. WWW.
  - d. E-Mail.
4. Patents.
5. Standards.
6. Theses (M.S.) and Dissertations (Ph.D.)
7. Unpublished work.
8. Periodicals (journals).

UL recommends using the software package EndNote for handling references. EndNote is a bibliographic management software program which allows you to create your own reference database and then to use that database to generate a bibliography of your papers, books and theses. It is available in Desktop and Web versions and a copy for installation can be obtained from the library.

Examples from [1] are presented below and identify the citation style for the common types of reference. A more detailed description can be found in [1], [2].

(i) **For Books**

*Basic Format*

[1] J. K. Author, "Title of chapter in the book," in *Title of His Published Book*, xth ed. City of Publisher, Country if not USA: Abbrev. of Publisher, year, ch. x, sec. x, pp. xxx-xxx.

*Example*

[1] B. Klaus and P. Horn, *Robot Vision*. Cambridge, MA: MIT Press, 1986.

(ii) **For Conference Technical Articles**

*Basic Format*

J. K. Author, "Title of paper," in *Unabbreviated Name of Conf.*, City of Conf., Abbrev. State (if given), year, pp. xxx-xxx.

*Example*

A. Van den Bosch, M. Steyaert, and W. Sansen, "An accurate statistical yield model for CMOS current-steering D/A converters," in *Proc. IEEE ISCAS*, 2000, pp. 105-108.

(iii) **For Periodical (Journal) Articles**

*Basic Format*

J. K. Author, "Name of paper," *Abbrev. Title of Periodical*, vol. x, no. x, pp. xxx-xxx, Abbrev. Month, year.

*Example*

[1] R. E. Kalman, "New results in linear filtering and prediction theory," *J. Basic Eng.*, ser. D, vol. 83, pp. 95-108, Mar. 1961.

(iv) **For WWW**

*Basic Format:*

[1] J. K. Author. (year, month day). *Title* (edition) [Type of medium]. Available: [http://www.\(URL\)](http://www.(URL))

*Example:*

[1] J. Jones. (1991, May 10). *Networks (2nd ed.)* [Online]. Available: <http://www.atm.com>

## References

- [1] The Institute of Electrical and Electronics Engineers (IEEE). (2009, September). *IEEE Citation Reference* [Online]. Available: <http://www.ieee.org/documents/ieeecitationref.pdf>
- [2] International Journal of Simulation Systems, Science & Technology, *IEEE Citation Style Guide* [Online]. Available: <http://www.ijssst.info/info/IEEE-Citation-StyleGuide.pdf>