Project Planning aspects:
Ethics
Measurables
Risk management
What is ethics?

• Moral principles that govern a person’s behaviour or the conducting of an activity:

• the principles and rules of conduct governing an individual or a group

• a belief that something is very important
Ethics

Resources:

Royal Academy of Engineering:

http://www.raeng.org.uk/policy/engineering-ethics/ethics
Statement of ethical principles

1. Accuracy and rigour

Professional engineers and technicians have a duty to ensure that they acquire and use wisely and faithfully the knowledge that is relevant to the engineering skills needed in their work in the service of others. They should:

- always act with care and competence
- perform services only in areas of current competence
- keep their knowledge and skills up to date and assist the development of engineering knowledge and skills in others
- not knowingly mislead or allow others to be misled about engineering matters
- present and review engineering evidence, theory and interpretation honestly, accurately and without bias
- identify and evaluate and, where possible, quantify risks
Statement of ethical principles

2. Honesty and integrity

Professional engineers and technicians should adopt the highest standards of professional conduct, openness, fairness and honesty. They should:

- be alert to the ways in which their work might affect others and duly respect the rights and reputations of other parties
- avoid deceptive acts, take steps to prevent corrupt practices or professional misconduct, and declare conflicts of interest
- reject bribery or improper influence
- act for each employer or client in a reliable and trustworthy manner
Statement of ethical principles

3. Respect for life, law and the public good

Professional engineers and technicians should give due weight to all relevant law, facts and published guidance, and the wider public interest. They should:

• ensure that all work is lawful and justified
• minimise and justify any adverse effect on society or on the natural environment for their own and succeeding generations
• take due account of the limited availability of natural and human resources
• hold paramount the health and safety of others
• act honourably, responsibly and lawfully and uphold the reputation, standing and dignity of the profession
4. Responsible leadership: listening and informing

Professional engineers and technicians should aspire to high standards of leadership in the exploitation and management of technology. They hold a privileged and trusted position in society, and are expected to demonstrate that they are seeking to serve wider society and to be sensitive to public concerns. They should:

• be aware of the issues that engineering and technology raise for society, and listen to the aspirations and concerns of others
• actively promote public awareness and understanding of the impact and benefits of engineering achievements
• be objective and truthful in any statement made in their professional capacity
Measurables

Risk management should be an integral part of the planning and operation of a project:

• Analyse
• Plan and implement response
• Track risks and dependent activities
• Develop mitigation strategy

If it goes wrong versus when it goes wrong
How students typically view a project

Decision point in risk management:

What do I do if something goes wrong?

Why is this wrong?
How students typically view a project

Decision point in risk management:

What do I do WHEN something goes wrong?

- Do this
- Then do this
- Then look at this
- ONE MILLION DOLLARS!!!
Risk Management

Risk management should be an integral part of the planning and operation of a project:

- Analyse
- Plan and implement response
- Track risks and dependent activities
- Develop mitigation strategy
ELEC6211

Project Preparation

Part II: The Project Plan

Dr Nicolas Green
The Project Plan

5 page document

1 page:
• Aims/research question
• Objectives

1 page:
• Proposed research methodology summary
• Proposed analysis methodology summary

1 page:
• Research plan Gantt chart (or similar)

1 page:
• Ethical statement

1 page:
• Legal and commercial aspects
The Project Plan

Start with a title 😊. Does not have to be the final one. And don’t forget your name
Aims/research question and Objectives

Lay out the main aim(s) of the project, sometimes referred to as the research question. Make sure that this is relatively realistic and achievable and explained in sufficient detail as to be unambiguous.

Present the objectives of your work. These would, in principle, form the basis of the work activities that you intend to carry out. The objectives should also inform the plan of work presented in chart form in the plan.

Objectives should be outcome based. For example: “to demonstrate the operation of a digital synthesiser with a output level of 25 Volts”, should really be “to demonstrate an output level of 25 Volts”. The first part is likely to be the aim of the work or to be a separate objective in a series.
Proposed methodology

This is a simple summary of the practical research methods and analytical methods you are proposing to use or investigate.

There is no requirement for detail here. This should be a rough outline only, demonstrating that you have a good idea of what methods and techniques are suitable/ideal/possible, with a brief discussion of why you think this is so.

This is a basic form of an experimental or research design framework and will allow you to discuss these matters with your supervisor.
Proposed plan chart

Using a Gantt chart or any similar form, lay out a rough idea of the plan of work you intend to follow in your project.

Focus on demonstrating the relative lengths of each aspect and any inter-relationship between activities.

Highlight objective end points or milestones and any follow on aspects which may arise.

Also use some method to indicate optional or “it would be nice” aspects to the work.

Obviously at this stage, this will be a rough guess compared to when you are actually doing the project. Keep this in mind when defining the activities, laying out realistic times and endpoints. Provide more detail for the beginning three-four weeks as well.
Ethical statement

The application of technology always has ethical implications. They may be generic and difficult to define.

For those projects with direct ethical issues, such as those that involve human data, this statement is straightforward. It should lay out those issues, the controls which you are including in your methodology and how you are going to make your application for ethical approval from the University.

For those projects and the remaining ones, the ethical statement should cover the ethical implications of the work presented in your project in the area of application which you have identified. Summarise those implications, any aspects which would have an effect on the development of the project work in the future and any effects the project work would have for ethics in related areas.

This should be informed by discussion with your supervisor, particularly if you have to make an ethical approval for your project.
Legal and commercial statement

This should be a short description of the commercial potential of the research project you are undertaking, what commercial influences there are likely to be and what legal aspects and/or frameworks are likely to apply.

It should focus on the likely endpoint of the research rather than the specific endpoint of your project. However, it may be that the project has an actual demonstrable output, which would make this an easier topic to write about.

This again is only supposed to be a summary discussion. You should focus on writing a clear and easy to follow statement but there is no need to have an indepth investigation. This should be informed by your ongoing discussions with your supervisor.
Introduction

The purpose of this coursework is to allow you to demonstrate knowledge and understanding of your project subject. This will take the form of a poster presentation in a conference style format.

You will prepare a poster according to the basic formatting rules given below. The topic of the poster will be related to the topics of the Project Preparation module. Specifically the poster should cover the following points:

• The aim(s) of your project
• Why the project matters
• What you are going to achieve (potentially)
• What the outcomes of your project will mean (potentially)

The poster therefore is not about the project but about the motivation for the project and its aims.

You should prepare a poster of size A1 in portrait format. There are no specific formatting requirements as we will discuss momentarily.
What is a Poster?

A poster is a form of technical presentation where the information is presented logically in the same order as a technical article: Introduction, background, methods, results, analysis, discussion, conclusions, references.

This is then presented by the author at conferences or meetings, where they stand in front of it and answer questions. It is a more personal (and arguably better) form of presentation than an oral lecture style presentation as you are able to discuss the work in more detail. At conferences there is an extended period where all the posters are displayed and conference attendees wander around and read posters they are interested in.

It is highly visual and should appear attractive. It also DOES NOT need to explain everything as it is a PRESENTATION which has a presenter to explain in detail.
Format of a Poster

There are no specific formatting requirements but the poster must have a title, your name and the name of your supervisor, as well as which MSc programme you are studying.

What do you think?
Format of a Poster

Remember the following points:

• A poster presentation is a PRESENTATION, i.e. you present it. Information is a combination of what is on the poster and your response to questions.

• Follow roughly the same concepts as a written paper: introduction, method, results, analysis, conclusion... but do NOT write a lot of text.

• As for all scientific writing, language should be clear and unambiguous but above all, short, concise, brief, concise, succinct and concise.

• Posters have unique aspects which papers and oral presentations do not: first it is one-to-one – no other medium has that. Second, it is one-shot static. The poster has to cover it all.

• As a result, format and layout are critical:
  • Some people say you should follow the layout of a paper with boxes for each section laid out in columns – this is just an oral presentation with the slides stuck on in order
  • A poster is a highly visual mode of communication and you should use that to your advantage with graphics and colours which support the presentation and transfer of information – for example arrows can be used to guide the reader through the poster.
  • The poster IS an ABSTRACT
Typical scientific examples

Get-Passives in Different Age Groups

Daniel Boyle and Eliza Lei

Abstract
This study examined how the preference of using the get-passive (e.g., “it gets stolen”) over the be-passive (e.g., “it was stolen”) differs across people of different age groups. We hypothesized that younger speakers would be more likely to use the get-passive than older speakers. Our hypothesis was supported by a survey in that the 18-30 age group claimed to use the get-passive significantly more than did the 30 and above age group.

Introduction
The get-passive has historically been the auxiliary used in English passive constructions.

More recently, passive constructions using “to get” have emerged.

This is typically considered to be a feature of informal speech.

Younger speakers of English have been known to use informal forms in informal contexts.

Hypothesis

Younger speakers are more likely to use get-passives in their speech than older speakers.

Method

Participants were separated into two groups by age: 18-30-year-olds (n=32 respondents) and 30-year-olds, comprising 21 respondents—8 of which were ages 30-40 and 13 age 60 and over.

Data was collected by means of a survey in which participants were asked to self-analyze their use of the get- and be-passive.

Subjects were exposed to 10 pairs of sentences, including 6 pairs of filler questions involving non-passive or non-comparative tests of “to be” and “to get.” Each pair of sentences was identical except for the auxiliary verb used.

Sample Questions

Check the answer that best applies to you in how you would use the verb in bold.

John and Mary get married in a chapel.

a. I would definitely say something like this.
   b. I might say something like this.
   c. I would never say something like this.

John and Mary were married in a chapel.

a. I would definitely say something like this.
   b. I might say something like this.
   c. I would never say anything like this.

Discussion

- Given the informal nature of get-passives, respondents may have reported some examples of get-passives that they would in fact use in everyday speech. It is thus possible that respondents would in fact use get-passives even more than was shown by the survey.
- Survey was distributed almost entirely to university or to temporary students.
- May have skewed the results even further; an informal speech may be considered less accurate.
- A different form of a sentence may yield different results.

Some sentences (e.g., “The glasses are shattered!”) could be interpreted as being passive (i.e., there was an electrostatic explosion) or active (i.e., someone) smashing the glasses.

Thus, respondents may have accepted such sentences as well as sentences even if they would not have accepted them as passive.

However, this applied only to the “to be” sentences and so did not affect our hypothesis.

- It may have been beneficial to be clearer in the instructions, i.e., differentiating between what our respondents would say (in speaking discourse) and what was said (which may imply explicitly or implicitly, as in a letter).

Results

- Figs. 1. Percentage of Answers to “Get” Question By Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Yes</th>
<th>Maybe</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30</td>
<td>80</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>30+</td>
<td>60</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

References


From the data, it is clear how the structure of the get-passive is important in the context of both English and other languages.
Format of a Poster

Where do people look when they first look at a poster?
Lab on a Chip Technology for Marine Research

This research intends to develop integrated microfluidic technologies for distributed situ analysis of oceanographic chemical and biochemical parameters. These technologies can help us understanding the oceans' role in fuelling marine food webs and in controlling climate.

Droplet manipulation and combination

Systems intended for research in lipid membrane structure and membrane protein analysis. Additional interests in unconventional computing and coupled oscillators where droplet-droplet communication comes from chemical species diffusing through the interdroplet membrane.

Micro or nano-structured systems to provide technological solutions for the Life Sciences, ranging from artificial life and systems biology to rapid diagnosis of disease. Core to the activity is the use of technologies that enable tiny amounts of fluid (nanolitres) to be manipulated and analysed on chip. These micro analytical devices (Lab on a Chip) systems are used for tissue engineering, drug discovery, cell manipulation and sorting, molecular diagnostics and implantable sensors.

Hybrid Biodevices

Microfluidic devices are designed and created within the cleanrooms of the Southampton Nanofabrication Centre and developed in the Wolfson Laboratory for Hybrid Biodevices, comprising 300 m² of custom laboratory designed for analysing clinical samples, culturing biological organisms and performing chemical biofunctionalisation reactions. This laboratory also contains a substantial suite of state-of-the-art optical and electrical instrumentation.

 Synthetic Biology

Point of Care label-free Analysis

Current technologies provide blood tests that may take up to two weeks for the patient. We are aiming at developing chips that can do simple differential blood count which can deliver the majority of results instantaneously in the doctor’s office.

Nanowires for Health Biosensing

Developing silicon nanowire technology for routine biomarker analysis of blood, outside of clinical laboratories, using a unique method of fabricating arrays of silicon nanowires that are incorporated in an advanced microfluidic matrix. Will provide a cheap and cost-effective finger stick means of regular screening for diseases allowing prevention and early intervention.
Your poster

Your poster will be presented at a poster conference on the 1\textsuperscript{st} and 2\textsuperscript{nd} June 2015. Students will be in groups of 5-ish and will peer assess using the marking scheme each poster other in your groups.
# Marking Scheme

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria for Poster (Marks Ratio)</th>
<th>Content and clarity (1/3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong>*</td>
<td>Neat and uncluttered poster, with excellent use of colour to engage and inform. Layout and visual elements capture the reader’s attention and engage interest. Figures clear and illustrate the topic excellently. Number of pictures/figures balanced to the content.</td>
<td>Key aspects and motivation stated excellently, in precise language. No grammatical, spelling errors or ambiguous meanings. Details correct and written in an engaging way. The number of words on the poster was balanced with the visual elements.</td>
</tr>
<tr>
<td><strong>A+</strong></td>
<td>Well-arranged poster. Use of colour in appropriate places to highlight parts. Layout and visual elements capture used to draw reader’s attention. Good use of well-drawn figures which illustrate the topic. Number of pictures/figures was balanced to the content.</td>
<td>Key aspects and the motivation stated well. No grammatical, spelling errors or ambiguous meanings. Details correct and well-written in clear sentences with descriptive phrases. Use of words on the poster well balanced with visual elements.</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>Some evidence of arrangement of information in poster or difficult to follow. Little or too much use of colour for effect. Some thought about the use of figures for illustration which illustrate the topic. Too few or too many pictures or figures.</td>
<td>Description of key aspects and the motivation stated. Few grammatical, spelling errors or ambiguous meanings. Sentences use short descriptive phrases. Too many or too few words compared with visual elements.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Little attempt at arrangement of information in poster or far too much clashing use of colour. Little use of pictures or figures.</td>
<td>Little attempt at clearly stating and describing key information. Grammatical and spelling errors. Sentences have ambiguous meanings. Far too many words.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>No attempt at arrangement of information in poster. Straight replication of paper layout on poster. No colour in poster or far too much clashing use of colour. No pictures or images.</td>
<td>Sentences are confusing and do not present much information. Numerous grammatical and spelling errors. Far too many words.</td>
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<tr>
<td><strong>D (Fail)</strong></td>
<td>Confusing presentation and arrangement of information. No use of colour or any other method of highlighting key points. No pictures or images.</td>
<td>Difficult to understand meaning in any of the written content due to confusing use of English or numerous grammatical and spelling errors.</td>
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### Grade Details

<table>
<thead>
<tr>
<th>Grade</th>
<th>Fail to qualify</th>
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<tbody>
<tr>
<td><strong>A</strong>*</td>
<td>D (Fail)</td>
</tr>
<tr>
<td><strong>A+</strong></td>
<td>C</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>B</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>70% - 79%</td>
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<tr>
<td><strong>C</strong></td>
<td>50% - 59%</td>
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<tr>
<td><strong>D (Fail)</strong></td>
<td>0% - 35%</td>
</tr>
<tr>
<td><strong>Fail to qualify</strong></td>
<td>35% - 49%</td>
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</tbody>
</table>
The peer assessment form is below. Using the marking scheme, you will then assess each poster other in your groups.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Fail to qualify</th>
<th>D (Fail)</th>
<th>C</th>
<th>B</th>
<th>A</th>
<th>A+</th>
<th>A*</th>
<th>Comments and feedback</th>
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<tr>
<td>Layout and Design</td>
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<td>Technical information</td>
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<td>Overall</td>
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This follows the straightforward form by ticking the appropriate box under the grade for each of the three criteria. Please also provide some positive and negative comments in the relevant boxes in **legible** handwriting.