

# Writing a Report:

## A Guide for Engineers

(2016 Edition for SEEE Students)

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# Table of Contents

Introduction	Page 1
Section 1: Getting Started with your Reports	Page 3
Section 2: Putting a Structure to your Ideas	Page 7
Section 3: Writing Style	Page 11
Section 4: Making your Reports Look Good	Page 14
Section 5: Plagiarism and Referencing	Page 19
References	Page 26
Appendix 1 Check List for Reports	Page 27

## List of Tables and Figures

Table 1: The Structure of a Report	Page 7
Figure 1: Sample Mind Map	Page 4
Figure 2: A Sample Table	Page 17
Figure 3: A Sample Graphic	Page 18

## **Introduction**

To be an effective engineer good communication skills are essential. This guide will help you to develop the skill of report and essay writing. Many students admit that they find it hard to write good quality reports and essays. This guide is meant to help you. It presents advice on:

- how to write a report;
- how to structure reports and essays;
- how to layout and present reports;
- how to correctly provide references for information sources.

**This guide provides advice which you should follow.**

There are a number of key tips which you should remember:

### **1. Good planning is the key to good writing**

You will write well if you take the time to plan. You should be absolutely clear of your objective when you start the project. You should know what your conclusions are before you start writing and your report, like a good film, should build towards these conclusions. It is important that the different parts of your report hang together and that there are clear links from paragraph to paragraph and section to section.

### **2. Keep language simple**

Do not use complicated sentences or unnecessary long words. A plain direct style is recommended. Avoid jargon as far as possible. If you use jargon explain the terms you are using.

### **3. Reports and essays should have a clear structure**

Information should be presented in a clear logical order with each new section building on information that has been provided already. Each report should have a beginning, a middle and an end. The reader should be able to easily navigate through your report.

### **4. Reports should be presented in a manner that attracts the reader and enhances the message**

Your documents should be clear and uncluttered. If the report looks interesting and easy to read the receiver will be motivated to read on. You should aim for the same high design standards that you would have for a piece of engineering.

## **5. Avoid plagiarism**

You should not pass off the work of others as your own. You are expected to research your projects and assignments and incorporate your research into the final product; but the work you hand up should be your own. You should provide references when you use other peoples work or quote the research of others. Essays and reports should not be reproduced from the internet in whole or in part.

**Please see Appendix 1 in the DIT General Assessment Regulations for more information on the DIT's policies and procedures for dealing with cheating.**

**(The DIT General Assessment Regulations can be found at <http://www.dit.ie/qualityassuranceandacademicprogramrecords/student-assessment-regulations/general/>)**

## **Structure of the Guide**

This guide provides advice on the key issues in writing reports and essays. Section 1 deals with the writing process and emphasises the importance of good planning. Section 2 provides information on the structure of reports and essays. This provides a vital checklist for ensuring your reports include all necessary information. Section 3 deals with writing style and proposes you use a simple direct style. Section 4 gives advice on the report layout while Section 5 gives advice on referencing.

## Section 1. Getting Started With Your Reports

The most difficult part of writing a report is getting started. **Good planning is the key to good writing.** The more time you spend planning the less time you will spend writing. Your reports will also read better if they are properly planned.

Your objective should be clear when you start the project. You should know what your conclusions are before you start writing and your report, like a good film, should build towards these conclusions. It is important that the different parts of your report hang together and that there are clear links from paragraph to paragraph and section to section. There are three main stages to completing any report: preparation; research and evaluation and writing and revision.

### Stage 1: Preparation

Sometimes students find it hard to get started with their assignments. You should be absolutely clear about your objectives from the start:

1. Do you understand the title of the project or the brief you have been given? Do you understand the meaning of all the relevant concepts in the title? If not, talk to lecturers and classmates.
2. Are you clear about your objective? Ask yourself:
  - What is my objective?
  - What is the main conclusion, point or argument I want to make?
  - What evidence, arguments or examples do I need to support my conclusion(s)?
3. Write a short statement of your aim. For example:

*"The aim of this report is to examine the causes of global warming"*

To meet this aim you may have to set out a number of objectives such as:

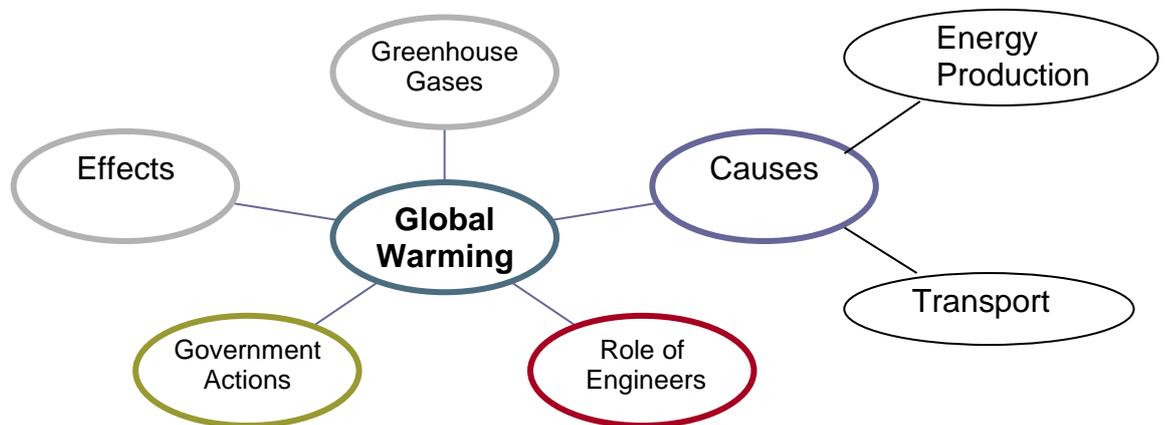
*"The report will explain the greenhouse effect.  
The report will outline the sources of greenhouse emissions.  
The report will analyse how greenhouse gases can be reduced with innovative design."*

## Stage 2: Research and Evaluation

Effective research involves a plan for the areas to be covered. Some techniques for getting your initial thoughts on paper include:

1. **Listing or Brainstorming:** List points as they come to mind. You can cross out irrelevant points later.
2. **Mind map:** This involves drawing a map. At the centre put the main topic, e.g. global warming, and branching out from it the main topics/items to be included; branching out from these again to the sub-topics (see Figure 1 which shows part of a mind map on global warming).

**Figure 1: Sample Mind Map**



3. **Outline Plan:** This involves writing up a **skeleton structure** for your report with headings and subheadings. A good outline will refer both to the structure and the content. Most reports have three main headings or sections and your outline should be based on these:
  - **Introduction:** Context and objectives including necessary background information.
  - **Main body:** Evidence and arguments. Does the evidence support the main points?
  - **Conclusions:** Conclusions reached and recommendations. They should be based on the evidence presented in your report.

Good planning provides a structure to start from. Writing the assignment then becomes like 'joining up the dots'.

You will rarely have all the information you need in your head. You will need to research your topic and find information which will both help you to write your report and support the points or arguments you want to make. Remember **you** are writing the report. You should use your research to address the objective which has been set for your report rather than simply reproduce the information you have found.

When conducting research do not get sidetracked. You should:

- talk to lecturers;
- find relevant reports, articles, books or essays on the subject - check libraries, journals, newspapers, internet;
- decide if you need to do any original research;
- check with relevant organisations;
- take notes of relevant material;
- document and file the material (always note the source of the information on your note, e.g. title, year, author, publisher, page number). This will save time later on.

Not all the material you find will be useful. You need to critically evaluate the material you read. After you read a piece of writing ask yourself:

1. Who wrote the piece? Are they reputable? Do they have a particular slant?
2. What specific evidence does the author cite in support of his/her position?
3. Is this evidence valid and convincing? If not, what other evidence would I need in order to be satisfied with the conclusions drawn?
4. Are there alternative explanations for the evidence supplied by the author?
5. What is the most plausible explanation warranted by the evidence available?
6. How do these ideas/findings fit in with what I know already?

### **Stage 3: Writing and Revision**

Unless you are extremely gifted, you will not complete a written assignment in one sitting. A first draft helps you to clarify your thoughts. You could proceed as follows:

1. Consider carefully what your conclusions and recommendations are going to be. This will determine how you organise and write the rest of the report.

2. Plan the main body of the report. Arrange the main sections in a logical sequence and decide on suitable headings and sub-headings. This task is easier if you have already devised an outline plan as part of your research.
3. Working through a section at a time, set out the evidence in note form under each heading and sub-heading. Make sure that the evidence presented builds towards the conclusions and recommendations.
4. Then begin to write the report in the following order: introduction, findings, conclusions, and recommendations. The outer structure of summary, appendices, table of contents and title-page should be left to the very end.

## Section 2. Putting a Structure on Your Ideas

Information should be presented in a clear logical order with each new section building on information that has been provided already. Each report should have a beginning, middle and an end.

### Paragraphs

Paragraphs are groups of sentences and are the essential building blocks of any report. Students often make the mistake of having no paragraphs or turning each sentence into its own paragraph. It is essential that each paragraph deals with one topic. There should be a clear progression from one paragraph to the next. All paragraphs must develop, explain or add detail to the topic sentence. The group of sentences in the paragraph should develop the main idea and progress it to the next stage.

### The Structure of a Report

It is important that your reports are logically structured and are easy to follow. Table 1 sets out the main sections of a report.

**Table 1: The Structure of A Report**

	<b>Report Structure</b>	<b>Report Sections</b>
<b>Begin</b>	Introduction	➤ Title Page
		➤ Table of Contents
		➤ Summary
		➤ Introduction
<b>Middle</b>	Main Body setting out your findings in logical order	Findings or information presented with clear headings and sub-headings.  <b>In formal reports they are usually presented in the following order:</b> ➤ <b>Methods of investigation</b> ➤ <b>Results</b> ➤ <b>Discussion of Results</b>
<b>End</b>	Conclusions & Recommendations	➤ Conclusions
		➤ Recommendations
		➤ Appendices
		➤ Bibliography

## **Title Page**

This enables the report to be easily identified and filed. It contains:

- the report title and writer's name and course;
- the date on which the report was submitted;
- the name of the person department or organisation to which the report was presented.

There may be a standard page or a standard format to follow. You should check that the title page conforms to what is required.

## **Table of Contents**

Lists the divisions and subdivisions as they appear in the report and gives the page number of each. A list of tables and figures should also be included (see the Table of Contents to this Guide).

## **Summary**

In most long reports there is an executive summary to aid a busy reader who does not have the time to read the full report. It should enable the reader to understand the main aim and the most important results, conclusions and recommendations.

## **Introduction**

The introduction should provide important information about the nature and background of the report and how the writer went about the task. You should say what you are going to do in the report. Your introduction should include some or all of the following:

- state the terms of reference (where given) and/or aims and objectives of the report;
- explain the scope of the report and outline constraints;
- define and explain key concepts;
- explain your approach to the subject;
- indicate how the report is structured.

## **Findings/ Information**

The information you have collected should be presented in a logical order with appropriate headings and sub-headings. This makes the report easier to read and the material more accessible.

Figures and tables essential to the report should be placed in the main body of the report. To avoid cluttering the report with detailed information you can place details in an appendix and report only the

key findings but keep evidence underpinning your conclusions in the body of the report. If appendices are used you should refer to them in the body of the report.

You should discuss your findings in light of the objectives of the report. Results should be considered in light of the information collected. You should provide evidence to support your conclusions.

### **Presenting Your Findings When You Have Collected Original Data**

**In formal reports when you have collected original data a more structured approach may be taken to the presentation of your findings. Usually results are presented with three sub-sections. There should be appropriate sub-headings within these sub-sections.**

#### ***Methods of Investigation/ Research Methods***

This should set out the methods used to collect data/information. This allows for the exercise to be replicated if necessary. If the reader is not told how and why the data were collected s/he cannot make any judgement about how good the research is and whether the findings are credible.

You should explain why the data were collected in a particular way and describe any limitations of the methods employed e.g. did any unexpected factors arise during the data collection?

**This section may not be necessary when writing a report based on library and web based research. In this case you should indicate in your introduction the main sources of information used in completing your report.**

#### ***Results***

Here the writer presents the results of the investigation clearly. These should be set out in a logical sequence with appropriate headings and subheadings.

#### ***Analysis of Results***

Usually results are presented first and then discussed in light of the objectives of the report. Results should be considered in light of the issues discussed in the introduction. Reference may be made to other research that confirms or contradicts the findings presented. You may seek to explain new or unusual findings.

## **Conclusions**

This section should identify your main conclusions. They should be reasonable in the light of the data collected and the analysis of that data. They can be listed in order of importance. **No new material should be introduced in this section.**

## **Recommendations**

Recommendations are specific proposals for further action. Conclusions identify problems and issues, recommendations suggest how they might be solved. This section should be a clear set of directives without any additional discussion. Each recommendation should propose a single action and may include proposals for further research.

## **Appendices**

Material that is too bulky, which is overly detailed or cannot be easily reproduced in the main body of the report can be put in the appendices. Examples would include minutes of meetings, graphs, tables, copies of questionnaires or technical specifications. The appendices should be relevant and not placed in the report as 'padding'. They should be clearly labelled and referred to in the text of the report. An appendix should have an introduction explaining the content.

**Material underpinning your conclusions should be presented in the main body of the report. If a set of statistics, a map or diagram is crucial to the understanding of the report then it should appear in the main text as a table or figure.**

## **Bibliography**

You should indicate clearly the sources of your information. Your reports should have a reference list at the end. More details on referencing are provided in Section 5.

## Section 3. Writing Style

A number of issues arise in relation to writing style. In general you should use a formal writing style but keep language simple. Do not use complicated sentences or unnecessary long words. A plain direct style is recommended. Avoid jargon as far as possible and the use of sexist language.

### Formal Writing Style

In academic reports you are expected to maintain some distance from the reader. A slightly more **formal style** than usual is used as in the following examples:

- "It is recommended" *rather than* "I recommend".
- "The results of the investigation show" *rather than* "my results show".

You should therefore avoid the use of personal pronouns such as I, we, you, your etc.

### Jargon

Jargon can be defined as words or expressions used by a particular group or profession. It is often referred to negatively as "gobbledygook" or "techno-babble". But it is the necessary terminology used in a specialised field. As engineers you will know and use all sorts of technical jargon. Your approach to using jargon will be affected by your audience. You should **know your audience**. Explain technical terms if they are not engineers. This may be necessary if they come from another branch of engineering.

You should keep jargon to a minimum. If you have to use technical language make sure you explain technical terms when you first use them.

### Sexist Language

It is not acceptable to write as if women did not exist. Usually when people write *he* they mean *he or she*. Some ways of avoiding sexist language are:

- Use *they*: "Even the most non-technically minded person can use a laptop if they put their mind to it."
- Use *he or she* or *s/he*.
- Use alternate examples. If you have to provide examples vary the gender of every second example.

## Direct Writing Style

"How effectively you achieve your objective will depend in part on your writing style" [1]. It is important that your message be as clear, concise and persuasive as possible. It is recommended that you use a plain direct style. The rules for achieving a direct style is set out in [2].

### ***Use the active voice***

The doer should be the subject of the sentence. This makes writing more dynamic, leads to the use of fewer words and it is always clear who is the 'actor'.

#### **Example:**

- *Passive:* A new office manager will be appointed by the Board on Tuesday.
- *Active:* The Board will appoint a new office manager on Tuesday.

### ***Avoid long, pompous words***

Use plain, simple words. They are usually the words most people understand. Using big words may make your writing appear pompous or pretentious. Using pompous words can make a message unintelligible.

#### **Example**

- We must endeavour to utilise all of our resources to the maximum advantage.  
*Instead:* We must try to use our resources to the full.
- Partial restructuring of information transmission procedures.  
*Means:* The notice board has been moved to a new location.

### ***Use verbs instead of abstract nouns***

Abstract nouns end in *ment, tion, ance, ence, etc* and include *assessment, entitlement, avoidance, suitability, preference, possession*. Using them makes a document slow and lifeless. Using verbs enlivens the document. This makes your document easier to read.

#### **Examples**

- This paper will present an assessment of .....*Instead try...* This paper will assess...
- Most of our customers express a preference for standard cheques.  
*Instead try...* Most of our customers prefer standard cheques.

## **Avoid Wordy Phrases**

Do not be long-winded. Replace some phrases with one word.

### **Examples**

- *With reference to* with *about*
- *In the event of* with *if*
- *At the present time* with *now*
- *With the minimum of delay* with *quickly*

## **Avoid redundancies**

This involves eliminating words that repeat an idea.

### **Examples**

- This paper will assess *precisely* and *exactly* the cause of
- The introduction will explain *from* where the information came *from*.

While proposing a simple direct style it is important that you do not end up with a loose informal style [2]: To avoid this you should

## **Use words in their correct sense**

Do not confuse words that sound the same. Be careful with:

accept – except, continual – continuous, council – counsel,  
affect – effect, personnel – personal, lead – led, of – off, its –  
it's, loose – lose, quiet – quite, their – there – they're, to- too-  
two, your – you're.

## **Avoid colloquial expressions or slang**

These are words and phrases that belong to informal conversation but are not acceptable in formal writing.

### **Examples**

- We have to decide whether to go for (*CORRECT* choose) leasing or buying.
- It will be a bit longer before we know whether agreement is on or not (*CORRECT* whether agreement can be reached).

## **Avoid contractions**

Write *cannot* instead of *can't*, *do not* instead of *don't* and *will not* instead of *won't*.

## Section 4: Making Your Reports Look Good

Reports should be presented in a manner that attracts the reader and enhances the message. Your documents should be clear and uncluttered. This makes them easy to read and will ensure the reader focuses on the content. Poorly presented reports which are full of mistakes make a negative impression on the reader.

All assignments should be **spellchecked** using the English (Ireland) version of the spellchecker on your computer. You should also **proofread** your assignments as spellcheckers will not pick up on words which are spelt correctly but misused. You should always ask another person to read over your report as sometimes it can be hard for the writer to spot mistakes.

The following presents some guidelines on presentation in relation to common mistakes made by students under three headings: basic layout, headings and tables, graphs and figures.

### Basic Layout

The following simple rules should be followed:

1. There should be a line between **paragraphs**.
2. There should be **margins** at the sides and top and bottom as follows:
  - 3 cm at sides
  - 2.5 cm at top and bottom.
3. You should use **1.5 spacing** and **12 point text**.
4. Use **capital letters** appropriately. Capitals should be used only if the word is a proper noun. A proper noun refers to a specific person, place or object.

E.g. An engineer came to look at the road. The Principal Engineer in Dublin City Council asked her to assess the road.

5. Use *italics*, **bold** and underline appropriately and sparingly. **It is preferable to use bold for emphasis and headings**. There is no need to underline bold headings.
6. Use **numbering** and **bullet point** lists to break up long sentences and provide material in an easily readable form. You should indent these lists and introduce them with a colon.

7. **Numbers** less than 13 should normally be spelt out. The number can be used if accompanied by a unit of measurement or it is part of a date. All numbers at the start of a sentence should be spelt out.

8. **Percentage** should be written in the text. You can use the symbol (%) in tables or when a number accompanied by a number e.g. 54%.

9. **Mathematical symbols** should be in *italics* as in the following examples:

$$x^2 + y^2 = c^2$$
$$f(x) = 3x^2 + 4x$$

10. When using **abbreviations or acronyms** spell out the full words the first time you use them followed by the acronym in brackets as in the following examples:

Dublin Institute of Technology (DIT)  
Electricity Supply Board (ESB)

After the first instance, the acronym can be used.

11. Put **page numbers** at the bottom of the page in the centre. Page number should be included in the table of contents and should not be used on the title page.

12. You may want to include a **header or footer** in long documents which give the name of the report and the section. **Put these in small type (size 8 or 10)**. You do not need both headers and footers. In short documents they are not normally necessary but if you use them do so sparingly. Your name and the title of the report is normally enough information.

## Headings

Use of **headings and sub-headings** can separate the text into blocks in a way that makes the reader's task of understanding the overall report far easier. They act as signposts. As with signposts, too few and the reader gets lost, too many and the reader is confused. As with signposts, their success depends on being clear and being in the right place [3].

Use a consistent system of headings and ensure section headings are the same. Do not place a heading at the bottom of a page without any accompanying text.

You could use the following system:

Heading Level 1: **3. Centred Title Case Bold 14**

Heading Level 2: **3.1 Side Heading Title Case Bold 12**

Heading Level 3: **3.1.1 Side Title Case Bold Italics 12**

Heading Level 4: *Side Non-bold Italics 12*

Headings and sub-headings do not need to be underlined.

## **Tables, Graphs and Figures**

Tables, graphs and figures can be used to help the reader understand your report and enliven the message. But when you use them they:

- Should have a point and help understanding.
- Should reveal data and support what is in the text.

Word processing and spreadsheet packages contain table-making and chart-making facilities, so drawing tables and charts should not be a problem. These facilities should be used to present data in a way which is clear, precise and informative.

### ***Tables***

Tables are used to present data. They can be useful when you have a lot of information or you want to compare two sets of data. Tables should be kept simple. Too much data will make them difficult to understand.

An effective table has the following characteristics (see Figure 2):

- It appears in the text in a convenient position **after** its first mention.
- It has a clear identity number i.e. Table 1, Table 2 etc.
- The source of the data should be given if the data are not yours.
- It has a clear informative title at the top.
- The data are rationally organised.
- Columns and rows should have clear descriptive headings.
- Units of measurement should be stated.
- Important data should be emphasised by their position in the table.

When presenting data in tables:

- Round off numbers if possible and desirable; be consistent.
- Organise tables so that the reader compares the columns.
- Order columns by size or chronological order whichever is relevant.

**Figure 2: A Sample Table**

**Table 13: Some Elastic Properties of Selected Materials**

Material	Density $\rho$ (kg/m <sup>3</sup> )	Young's Modulus $E$ (10 <sup>9</sup> N/m <sup>2</sup> )	Ultimate Strength $S_u$ (10 <sup>6</sup> N/m <sup>2</sup> )	Yield Strength $S_y$ (10 <sup>6</sup> N/m <sup>2</sup> )
Steel <sup>a</sup>	7860	200	400	250
Aluminium	2710	70	110	95
Glass	2190	65	50 <sup>b</sup>	—
Concrete <sup>c</sup>	2320	30	40 <sup>b</sup>	—
Bone	1900	9 <sup>b</sup>	170 <sup>b</sup>	—
Polystyrene	1050	3	48	—
Wood <sup>d</sup>	525	13	50 <sup>b</sup>	—

<sup>a</sup>Structural steel (ASTM-A36).

<sup>b</sup>In compression.

<sup>c</sup>High strength.

<sup>d</sup>Douglas fir.

Source: [4]

### **Figures and Graphs**

Graphs, bar charts and pie charts can be used to illustrate your data and may be useful if you want to indicate a trend or a striking comparison. The detailed data may not be as important as the overall impact.

When producing graphs/graphics/figures (see Figure 3):

- Give the source of the data.
- Place a clear label at the top.
- Keep them simple; this will make the impact more striking.
- Order the information to make your point.
- Make sure each axis is clearly labelled.
- Make sure units of measurement are clear.
- Use horizontal labelling.
- Use a key or legend if graph is cluttered.

- Place the figure in the text in a convenient position **after** its first mention.

### Figure 3: A Sample Graphic

**Figure 1: Deaths at Work in Ireland 2000-2006**



Source: Health and Safety Authority Annual Reports 2000-2006

### **Pictures**

Images and pictures should be relevant and assist understanding. Make sure they are clearly labelled and give the source. Avoid **clipart** as these images do not contribute to understanding.

## Section 5: Plagiarism and Referencing

A vital element of all professional writing is the ability to undertake background research in your subject area. You are expected to research your projects and assignments and incorporate your findings into the final product. While you are expected to draw on this information in putting your project together, the work you hand up should be your own and where you use the ideas or information of others this should be clearly indicated.

At third level it is accepted practice to use and build on the work of others in an open and explicit manner provided due acknowledgement of their work is recorded. It is important to note, therefore, that all sources must be given due and correct acknowledgement by means of a list of references. This Guide provides full details on how to reference your reports correctly.

### What is Plagiarism?

Plagiarism is regarded as either intentionally or unintentionally '*passing off*' others' work as one's own. Plagiarism is using the work of others without acknowledging your sources of information or inspiration.

The following activities may constitute plagiarism:

- Copying and presenting another person's work as your own.
- Enlisting another person(s) to complete an assignment on your behalf.
- Not acknowledging the work of all group members in group projects.
- Using quotations directly from books, articles or other sources without acknowledgement.
- Paraphrasing without acknowledging the author(s).
- Failure to distinguish your own ideas from those of an author.
- Citation errors, such as providing false information about a source.
- The use of similar sentence structure as the source with changes made to selected words, e.g. such as the use of synonyms as well as when the overall text still resembles the original.
- Cutting and pasting material from the internet (i.e. text, diagrams, tables, graphs and pictures) without acknowledging the original source.

## **Avoiding Plagiarism**

To avoid plagiarism:

1. Write your preparatory notes in your own words.
2. Make a record of where **exactly** you read the information in your notes.
3. In your assignment, outline where your ideas and information come from:
  - reference your work;
  - make clear when you are using a direct quotation or paraphrasing others;
  - provide a full list of references at the end of your project.
4. You should cite your source in the following cases:
  - When using a direct quote.
  - When paraphrasing the author.
  - When borrowing an opinion or idea.
  - When discussing and/or mentioning facts that are not common knowledge.
  - When using charts, pictures, tables and diagrams from another source.

Essays and reports should not be reproduced wholesale from the internet in whole or in part. This does not preclude you from using information from the web in the same way that you would use information from books and articles. When you use material from the web it should be clearly referenced.

### **What do the DIT Assessment Regulations Say?**

“The Dublin Institute of Technology considers plagiarism to be a serious academic offence. Plagiarism is a breach of academic values, academic conventions and codes of practice.”

Disciplinary action under the terms of the DIT General Assessment Regulations may be taken against students who plagiarise.

For more information see

<http://www.dit.ie/qualityassuranceandacademicprogrammerecords/student-assessment-regulations/general/>

## Referencing

Referencing is a standardised method of acknowledging sources of information and ideas that you have used in your assignment in a way that uniquely identifies their source. It is a vital element of professional writing. Direct quotations, facts and figures, as well as ideas and theories, from both published and unpublished works must be referenced.

It is necessary to reference your work for the following reasons:

- So that you can demonstrate that you have reviewed material in your subject area; you should demonstrate that you have read around your topic.
- So that readers can easily find any publication referred to in your document.
- To show that you have taken care in presenting your work. If your referencing is poor, readers may assume that your whole document is poor.
- It is plagiarism to represent, without acknowledgement, another persons' work as your own.
- Remember there is the possibility you will lose marks from your assignment if it is discovered that you have plagiarised from another's work. It is also possible that disciplinary action will be taken.

The School of Electrical and Electronic Engineering recommends the (Institute of Electrical & Electronic Engineers) **IEEE referencing system** [5]. This guide provides an explanation of the IEEE citation style. In IEEE citations, **the references should be numbered and appear in the order they appear in the text**. When referring to a reference in the text of the document, put the number of the reference in square brackets.

There are three basic steps involved in referencing:

1. Take down the full bibliographical details including the page number(s) from the sources(s) of your information.
2. Citing the reference involves placing a number enclosed in square brackets, eg. [1] or [26], in the text of your report. Once a source has been cited, the same number is used in all subsequent references.

Here are some examples of this kind of referencing :

The theory was first put forward in 1987 [1].

Scholtz [2] has argued that.....  
Several recent studies [3, 4, 15, 16] have suggested that...

3. Provide a numbered list of references at the end of the document (see examples below).

### **Recording Bibliographical Details**

Information needed to locate the source of information usually includes:

- full surname and initial of the author;
- year of publication;
- the title of the publication;
- for journal articles, the name of the journal along with the volume and issue number;
- the edition, if relevant;
- the place of publication and the name of the publisher for books;
- relevant page numbers, especially for journals.
- URL if using an online source. You should also record the date you accessed any websites.

You should keep records of all the sources you use.

The IEEE citation style has 3 main features:

- The author name is first name (or initial) and last (surname).
- The title of an article (or chapter, conference paper, patent etc.) is in quotation marks.
- The title of the journal or book is in italics.

These conventions allow the reader to distinguish between types of reference at a glance. The correct placement of periods, commas and colons and of date and page numbers depends on the type of reference cited. Check the examples below. Follow the details exactly. Put periods after author and book title, cite page numbers as pp., abbreviate all months to the first three letters (for example Jun.)

## Print References

### Book

Author(s). *Book title*. Location: Publishing company, year, pp.  
Example: [1] W.K. Chen. *Linear Networks and Systems*. Belmont, CA: Wadsworth, 1993, pp. 123-35.

### Book Chapters

Author(s). "Chapter title" in *Book title*, edition, volume. Editor's name, Ed. Publishing location: Publishing company, year, pp.  
Example: [2] J.E. Bourne. "Synthetic structure of industrial plastics," in *Plastics*, 2nd ed., vol. 3. J. Peters, Ed. New York: McGraw-Hill, 1964, pp.15-67.

### Article in a Journal

Author(s). "Article title". *Journal title*, vol., pp, date.  
Example: [3] J. R. Beveridge and E. M. Riseman, "How easy is matching 2D line models using local search?" *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 19, pp. 564-579, June 1997.

### Articles from Conference Proceedings (published)

Author(s). "Article title." *Conference proceedings*, year, pp.  
Example: [4] D.B. Payne and H.G. Gunhold. "Digital sundials and broadband technology," in *Proc. IOOC-ECOC*, 1986, pp. 557-998.

### Papers Presented at Conferences (unpublished)

Author(s). "Paper's title," Conference name, Location, year.  
Example: [5] B. Brandli and M. Dick. "Engineering names and concepts," presented at the *2nd Int. Conf. Engineering Education*, Frankfurt, Germany, 1999.

### Standards/Patents

Author(s)/Inventor(s). "Name/Title." Country where patent is registered. Patent number, date.  
Example: [6] E.E. Rebecca. "Alternating current fed power supply." U.S. Patent 7 897 777, Nov. 3, 1987.

## Electronic References

### Books

Author. (year, Month day). *Book title*. (edition). [Type of medium]. Vol. (issue). Available: site/path/file [date accessed]  
Example: [7] S. Calmer. (1999, June 1). *Engineering and Art*. (2nd edition). [On-line]. 27(3). Available: [www.enggart.com/examples/students.html](http://www.enggart.com/examples/students.html) [May 21, 2003].

### **Journal**

Author. (year, month). "Article title." *Journal title*. [Type of medium]. Vol. (issue), pages. Available: site/path/file [date accessed]. Example: [8] A. Paul. (1987, Oct.). "Electrical properties of flying machines." *Flying Machines*. [Online]. 38(1), pp. 778-998. Available: [www.flyingmachjournal/properties/fly.edu](http://www.flyingmachjournal/properties/fly.edu) Dec. 1, 2003].

### **World Wide Web**

Author(s)\*. "Title." Internet: complete URL, date updated\* [date accessed]. [9] M. Duncan. "Engineering Concepts on Ice. Internet: [www.iceengg.edu/staff.html](http://www.iceengg.edu/staff.html), Oct. 25, 2000 [Nov. 29, 2003].

### **Other Sources**

Newspaper Author(s)\*. "Article title." *Newspaper* (month, year), section, pages. Examples: [10] B. Bart. "Going Faster." *Globe and Mail* (Oct. 14, 2002), sec. A p.1. "Telehealth in Alberta." *Toronto Star* (Nov. 12, 2003), sec. G pp. 1-3.

### **Dissertations and Theses**

Author. "Title." Degree level, school, location, year. Example: [11] S. Mack. "Desperate Optimism." M.A. thesis, University of Calgary, Canada, 2000.

### **Lecture**

Lecturer(s). Occasion, Topic: "Lecture title." Location, date. Example: [12] S. Maw. Engg 251. Class Lecture, Topic: "Speed skating." ICT 224, Faculty of Engineering, University of Calgary, Calgary, Alberta, Oct. 31, 2003.

### **Citing more than one reference at a time**

When citing more than one source at a time, the preferred method is to list each reference number separately with a comma or dash between each reference:

Example: [1], [3], [5] or [1] - [5]

### **Exact page number References**

To indicate a page range use pp. 111-222. If you refer to only one page, use only p. 111.

### **Using WIKIPEDIA**

Wikipedia is not a reliable source of information. Entries in Wikipedia can be edited by anonymous contributors. Therefore you do not know if they are credible and have the information and authority to write the entries. You should not cite Wikipedia in your reports although you can use it to point you towards resources which may be helpful and reliable.

## References

1. P. Hartley and C.G. Bruckman, *Business Communication*, London: Routledge, 2002, pp 163.
2. H Mc Clave, *Communications for Business*, 2nd ed., Dublin: Gill and Macmillan, 1997, pp.78-85.
3. Denscombe, *The Good Research Guide*, 2<sup>nd</sup> ed, Maidenhead: Open University Press, 2003, pp 290.
4. D. Halliday, R. Resnick and J. Walker, *Fundamentals of Physics*, 6<sup>th</sup> ed., John Wiley & Sons, 2001, p.285.
5. IEEE Citation Reference, <http://www.ieee.org/documents/ieeecitationref.pdf>, [Jan 4<sup>th</sup>, 2016]

## **Appendix 1: Checklist for Reports**

The following checklist has been prepared to assist you in completing your reports. It is meant to provide some guidelines and suggestions to enable the student to present their assignment work in the best manner in accordance with third level expectations.

### **Check List for Reports**

- Have you read the directions fully and do you understand them?
- Are your aims and objectives clear?
- Have you stated in your introduction what you are setting out to do?
- Have you completed all the requested tasks?
- Have you done enough research?
- Did you use the research in the body of the report?
- Is the research related to the topic and aims of the report?
- Have you planned the structure and outline of the report? Is the structure clear?
- Does this plan relate to the aims and objectives?
- Have you analysed the material and provided conclusions?
- Have you written the conclusion and are they clear
- Do you have a title page?
- Is there a table of contents?
- Are your headings and sub-headings structured in the same manner?
- Are there page numbers?
- Did you use full paragraphs?

- Are the paragraphs spaced uniformly?
- Did you use short, simple and direct sentences?
- Have you used capital letters incorrectly?
- Have you explained acronyms?
- Has the report been written in the third person? (i.e. you did not use the following words: I, he, she, etc.)
- Did you spell out all words/numbers? (i.e. 'and' instead of '&')
- If you used charts, etc., did you explain the relevance of them?
- If you used charts, graphs or pictures, did you label them properly and provide references for them?
- Did you use spell check?
- Did you re-read the paper after the spell check?
- If a group project, did other group members read the report?
- Did you reference all research in required style in the report?
- Do you have a reference list at the end of the report?