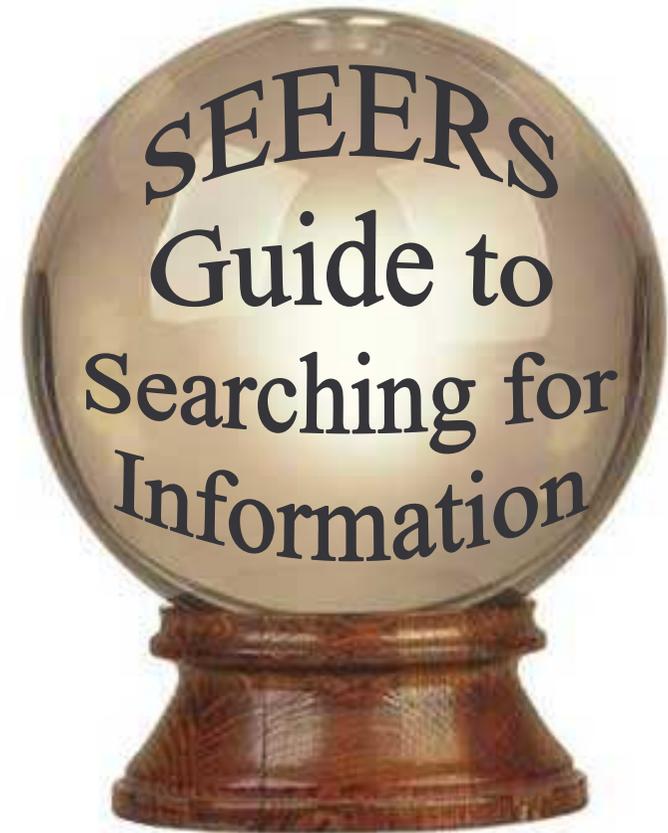


SEEERS Guides

To support you throughout the second year tutorial system there is a series of SEEERS (School of Electrical and Electronic Engineering Resource Supplements) Guides. These are designed to provide timely information and advice. This is the fourth such guide.

SEEERS Guides to:

- Second Year Tutorials
- Manchester Steps
- Small Group and Team Work
- Searching for Information
- Project Planning
- Group Presentations
- The Marking Scheme



**School of Electrical and
Electronic Engineering
Resource Supplement
Guide to
Searching for Information**

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The following web-sites provide a more detail description of referencing and citation:

<http://www.mace.manchester.ac.uk/aboutus/informationcentre/informationkills/citationreferencing/>

<http://www.humanities.manchester.ac.uk/studyskills/assignments/reference/>

To help you keep track of information that you have accessed and intend to use, you could create a database or spreadsheet. However, there is software available that not only stores your information, but manages the citation and referencing in your report, such as **Endnote**:

<http://www.itservices.manchester.ac.uk/applications/endnote/>

Referencing

When reporting your work it is very important to reference all your sources. Referencing serves a number of purposes:

- It allows the correct attribution of an ideal or piece of work to an author,
- It provides evidence that what you are saying has some grounding, it is not just your say so,
- It helps researchers trace ideas back to their source,
- It allows you to demonstrate competence at scholarship, something that may well be assessed, whether explicitly or implicitly,
- It guards against **plagiarism**. Plagiarism is falsely attributing someone else's work as your own: this is unethical. The University's policy on plagiarism is described at: www.manchester.ac.uk/medialibrary/policies/Plagiarism.

Consequently, it is important to record all the necessary information of your sources to allow you to make a complete reference.

Introduction

An important part of any project is the initial research. The quality of your understanding of the problem and subsequent solution depends strongly on the quality of your initial information gathering and the reliability of any sources found.

Information searching skills are increasingly important as the quantity of information available increases. This guide provides some pointers to help guide you.

In addition to this guide, an excellent on-line tutorial about information searching, which is written especially for Electronic Engineers can be found at:

www.vts.rdn.ac.uk/tutorial/elec

This not only provides sound advice on information searching, but also gives a tour through many web-sites relevant to electronic engineers.

Search Strategy

Define the concept and search terms

Write down what it is you want to find out. Jot down related or alternative terms. Draw a Mind Map. Remember American spellings.

Decide time & geographical parameters

You will probably be interested in current information. Different countries may have different standards and laws.

Identify sources

The type of information you want may indicate likely sources for it.

Carry out search

Library catalogue, databases, search engines, ...

Locate information

Look up, follow link, collect from library.

Evaluate Results

Are your resources current and reliable?

Do they tell you what you wanted?

Evaluate search strategy

Has it found what you were looking for? Are there better ways of approaching the search?

Sources of Information

The Web

The world wide web is a vast resource, this is its strength and its weakness. It is usually possible to find something on any subject. However, finding appropriate and accurate information may be more difficult. Also it is very easy to be swamped by the quantity of hits. It is very easy to spend a lot of time on the web.

Search Engines

These are good at general searches for popular information, you will need to be specific in your search and check the quality of your results. Ensure you are searching not surfing. Remember there are more specific versions of popular search engines, for example **Google Scholar** and **Google Engineering**.

Web Gateways

These are subject specific resources that are compiled by experts, hence providing some quality assurance and reducing searches. The Resource Discovery Networks for Engineering is **EEVL**: <http://www.eevl.ac.uk/engineering>

Sources of Information

The Library

The library contains a large number of books, journals and reference material. These are high quality resources: they have been edited or peer-reviewed and selected as relevant, accurate and at an appropriate academic level. These are searchable through an electronic catalogue.

In addition the library provides access, through subscription to a large amount of electronic information, including:

- e-books and e-journals, like their paper counterparts, usually in PDF format.
- subject databases, of references such as **INSPEC** and **IEEE Xplore**.
- Links to other selected web-sites.

You may need an ATHENS password to access some of these resources, especially off-campus.

Librarians and subject librarians are available to provide advice on information searching and sources.

Search Tips

Make a pilot search

Too much information: refine search criteria.

Too little information: rethink terms.

Read the introduction or guide

Search boxes may look the same, but they do not necessarily behave the same. You need to be sure what it is actually searching and how it interprets the search string. Never assume, always question.

Read their search tips

Many search engines allow the use of Boolean terms, such as AND, OR, NOT, "exact phrases", and wildcards * ?. The defaults and syntax may vary between engines, but these can be use to narrow or broaden your search as required.

They may also offer other ways of specifying searches, through categories or types of information.

Work from present to past

So that you are looking at the most up-to-date information first.

Record search terms, sources, dates

Avoids duplicating searches, allows checking.

Record results

Cut, download or, e-mail.

Evaluating Information

Once you have found your information, you need to evaluate its relevance and reliability. This is especially true for items found on the web, where there is no peer-review or quality control. Anybody can publish anything, it need not be true. Ask Who? What? Where? When? Why?

Authenticity

Who wrote it? Do they have the authority or qualifications to say it? Is it their opinion or is it backed up by other sources? Do they have any bias, is it their product they are promoting?

Accessibility

This does not make it the best source.

Currency

When was it written? Is it up-to-date?

Geographic coverage

Is the information relevant to the UK?

Intellectual level

Is it popular, general and accessible or academic, precise and specific?

Primary/secondary Information

Is it raw data or interpretation?

Sources of Information

It is worth remembering that knowledge is not compartmentalised. Especially when solving real-world problems, you will need to draw together and integrate information from a variety of sources on a variety of subjects.

For example, to design your circuit you will need to combine information about sensors and circuit analysis and the specification of your PIC board.

Course Notes and Textbooks

Electronic Engineering has a hierarchical knowledge structure, that is new knowledge built upon more basic knowledge in a pyramidal fashion.

Your course notes may not contain the whole answer, but they may contain useful information and provide you with the language and concepts to understand other information that you find. Remember more than one module may be relevant.

Modules and textbooks often draw a boundary around a topic, to help define and contain it, remember these boundaries are not fixed.