

Information Sources in Mechanical & Manufacturing Engineering

INTRODUCTION

This guide is intended to help students to find information for an essay, project or dissertation in Mechanical & Manufacturing Engineering. (If you are particularly interested in manufacturing, you should also refer to the *Information Sources for the Birmingham Business School Guide*)

LITERATURE SEARCHING

The process of systematically searching for information on a subject is often referred to as "literature searching". This is an important skill which involves the ability to search the literature of a subject comprehensively for bibliographical references (references to published literature such as journal articles, conference papers and books). There are different ways to do this, but it may be worth including the following steps:

1. Define Your Subject

This may be difficult at first since you may be unsure about what exactly the assignment is about. You may need to find definitions, or at least locate a description, of those aspects of your assignment which need clarifying.

Use some of the specialised encyclopaedias, handbooks and dictionaries which can help by clarifying a definition or suggesting further reading.

Try these reference books; the electronic ones are available through the eLibrary.

ENGnetBASE (CRC Engineering Handbooks online)

A searchable and browsable collection of over 1,000 handbooks all providing full text.

Knovel

A collection of authoritative science and engineering reference books, from several publishers. Knovel provides analytical tools to enable you to analyse and manipulate the data in these books.

McGraw-Hill Encyclopedia of Science and Technology Science Reference q Q 121 M

This set of volumes contains articles about all the main topics in science and engineering, which are followed by lists of further reading.

Kempe's Engineers Year-book

Science Reference per TA 151.K4

This book includes facts, statistics, charts, graphs and illustrations.

McGraw-Hill Dictionary of Mechanical and Design Engineering Science Reference

TJ 9 M

This dictionary contains concise definitions of Mechanical Engineering terms.

The Engineering Handbook

Science Reference TA 151 E

Summarises all of the classical fields of engineering and the underlying fields of mathematics and materials.

Comprehensive Structural Integrity

Science Reference q TA 645 C

This multi-volume reference book contains case studies and covers: numerical and computational methods, failure, fracture, fatigue and bioengineering.

The printed resources are all located in the Science Reference Collection, in Zone LGC of the Main Library.

When defining your subject, consider the keywords that you will use in your search. Different words may be used to express the same concept, so be prepared to use new words or phrases which you will discover as you search. See the Library Guide *Effective Searching of Electronic Resources*.

<https://intranet.birmingham.ac.uk/as/libraryservices/library/documents/public/alcd-guides/sk10.pdf>

You could also discuss your topic with your Supervisor – he or she may be able to suggest various starting points.

Decide what time period your search needs to cover. Are you interested in reviewing recent developments, or do you want to cover the topic from the beginning? With some databases and indexes it is a good idea to start by looking for recent references, and work backwards.

2. Find Books

At the University of Birmingham: The Library Catalogue, available from <http://findit.bham.ac.uk>, contains records of books and periodicals held at all of Library Services' libraries. Search by keyword or classification to find information in the library on your subject.

At other libraries: COPAC provides links to the library catalogues for most academic, public and special interest libraries in the UK and Ireland:

<http://copac.ac.uk>

In Bookfind Online: Bookfind is a searchable database of books providing global coverage, with comprehensive information on UK and US titles, as well as English language titles from Australia, New Zealand and South Africa. The service is updated daily and has powerful searching capabilities, including the option to search by chapters and contents.

www.nielsenbookdataonline.com/

3. Find Periodical (Journal) Articles

Periodicals are published on a regular basis. They are an important resource as they are where the most up to date research is published. To find periodical articles on a subject it is often best to use abstracts, indexes or bibliographies. An index usually gives only a brief reference containing author, title and periodical details, but often an abstract is included providing a summary of the article. Sometimes chapters from books and technical reports are indexed too. The most frequently used abstracts and indexes in computer science are available as databases which you can search via **FindIt@Bham**.

FindIt@Bham (<http://findit.bham.ac.uk>) is a service providing access to a wide range of resources from electronic periodicals to databases to eprints and electronic books. It is also where you will find the Library catalogue. Users need to log into FindIt@Bham using their

Active Directory (ADF) username and password (also required for using WebCT and email). Once logged in you can choose from a number of options such as **Everything, Library Catalogue, Find Databases, Article Search, UoB Research & Publications** and **eJournals & eBooks**. **Find Databases** includes the option to discover what resources are available in computer science. Favourite eJournals and resources can be stored in your **eShelf**.

FindIt@Bham can also be accessed directly from the Library Services website (www.intranet.birmingham.ac.uk/library) or from the portal (www.my.bham.ac.uk) link to Library & Computing.

Try these databases:

Abstracts in New Technologies and Engineering (ANTE)

(A CSA database – see below).

ANTE indexes over 400 journals, magazines and newspapers on topics including: environment and safety; energy electrical and power engineering; communication; materials and metallurgy; measurement, testing and instrumentation.

CSA (Cambridge Scientific Abstracts) Databases

A large collection of databases, including over 20 engineering specific ones. Search all engineering databases by selecting the 'Technology' subject area from the search screen pull down menu. The databases are grouped together and so can be cross searched as collections or as individual databases. The 'Specific Databases' link lists the databases and clicking on the blue box with a white plus will list the databases in the collection so you can choose the level you want to search at. Of particular interest to mechanical engineers are Mechanical Engineering Abstracts and Mechanical and Transportation Engineering Abstracts (the latter is in the CSA Engineering Research Database collection which is in turn the CSA Technology Research Database collection).

Ei Compendex: available from Ei Village 2

Ei Compendex is an important database covering 5000 journals and conference proceedings in engineering and applied sciences. Coverage goes back to 1884.

International Abstracts in Operations Research

Online coverage goes back to 1989. The Library also has the printed version back to 1961 at Science Abstracts T 58.3.A1I6.

Inspec: available from Ei Village

Inspec is a bibliographic database which indexes journal articles and conference papers in electrical & electronics engineering, physics, control engineering, computing and manufacturing and production engineering. Summaries of articles are given, and some full-text links, but use the Library Catalogue to check for journals if there is no full-text link, or it does not work. Coverage is 1898-present.

RAM Database www.techxtra.ac.uk/ram/index.php

The Recent Advances in Manufacturing Database is a freely available abstracting and indexing service. The database covers nearly 40,000 articles from more than 500 leading journals, for 1990 onwards.

SAE Digital Library

Full-text of SAE (Society of Automotive Engineers) technical papers back to 1998. Our subscription does not include the ground vehicle standards (j-reports).

Science Citation Index Expanded on ISI Web of Science

This index covers more than 5000 journals across a wide range of scientific disciplines, and is one of three databases that make up the Web of Science, which is accessible via the ISI Web of Knowledge. The database covers material from 1900 onwards.

More electronic resources for Mechanical & Manufacturing Engineering are listed on **FindIt@Bham** <http://findit.bham.ac.uk> under the 'Find Databases' 'Search by Subject' option.

Library Services also has the following review journal which is likely to be useful to you:

Applied Mechanics Reviews <http://scitation.aip.org/ASMEJournals/AMR/> back to 2001 in electronic version, back to 1948 in print at per q TA in Zone 1D.

4. Find periodicals in the Libraries

Once you have found the details of articles which interest you, use the Library Catalogue to see if they are available in the Library. To do this, type in the name of the periodical into the Search Box and select **Library Catalogue**. **NOTE – You need to search for articles using the PERIODICAL TITLE, not the title or author of the individual articles.** If the Library subscribes to the periodical, the catalogue will list the shelfmark, the years covered and whether it is held in print or electronic format.

Finding electronic journals

Many periodicals are available in electronic format via **FindIt@Bham**. Use the **eJournals & eBooks Only** option for this search. Look out for the **View Online** option on the title entry on the Library Catalogue.

5. Find Information on the Internet

There is a wide range of mechanical and manufacturing engineering information on the internet, but you need to be wary of the quality of the information you find. Using subject gateways and sites such as those below, which are created by subject specialists, will ensure that you find valuable information:

Try these sites:

Internet Mechanical Engineer <http://www.vtstutorials.co.uk/default.aspx>

This is an interactive tutorial to help you learn how to find and use mechanical engineering resources efficiently on the internet. You will also build up a list of key mechanical engineering sites as you work through the tutorial, which takes about one hour.

Institution of Mechanical Engineers (ImechE)

www.imeche.org

Society of Automotive Engineers (SAE International)

www.sae.org/servlets/index

Society of Manufacturing Engineers (SME)

www.sme.org/

Scirus www.scirus.com/

A science search engine which only gives results from evaluated academic sites.

6. Use Other Sources of Information

a) Barbour Index Professional Series on FindIt@Bham

Full-text searchable database of UK based health and safety information, including environment and food safety information. Contains regulations, guidelines, articles, summaries of key documents and Guides which provide a quick overview of a topic. Onscreen help is available

b) British Standards on FindIt@Bham

Full-text of all British Standards in pdf format. These standards are officially approved specifications covering methods of testing, terminology, performance, construction requirements and codes of practice.

c) ESDU on FindIt@Bham

The Engineering Science Data Unit Database consists of validated engineering design data for a wide range of subjects, including aerodynamics, engineering structures, fatigue, fluid mechanics, stress and strength and tribology. On-screen help is available

d) Patents Information

Patents are a rich source of technical information and you will find our Patents Information guide gives information on patents, including the benefits of using patents as an information resource, recognising references to patents, and obtaining material from a patent library. It also provides URLs for patent databases.

<https://intranet.birmingham.ac.uk/as/libraryservices/library/documents/public/alcd-guides/dsci20.pdf>

7. Keep Up To Date

If you are undertaking a project over a period of time, you might find it useful to set up email alerts so that each time a relevant article is published you are alerted to it.

ZETOC (<http://zetoc.mimas.ac.uk>) is an electronic service which allows you to set up email alerts to new articles from particular journals or on particular subjects.

Many bibliographic databases and electronic journal services also have their own current awareness/alerting service.

8. Cite Your References

Keep systematic records and follow the advice in the *Preparing and Quoting References using the Harvard System* leaflet. Check with your tutor which referencing system you should use. There is more information about citing references on the Library Services i-cite web site at: www.intranet.birmingham.ac.uk/icite

You should include a list of the references that you have used at the end of your piece of work, and it is easiest to gather this information as you go along. Bibliographic software, such as RefWorks, EndNote or Reference Manager can help with managing your references.

9. Further Help

Web pages www.intranet.birmingham.ac.uk/library

Just Ask! www.intranet.birmingham.ac.uk/library/justask

Just Ask! Is an instant messaging service where you can talk to a librarian in real time and share web pages. If Just Ask! is off line you can send us your question 24/7 using the Just Ask email form.

Information Desks

The Information Desks are available for support and assistance with the information resources for your subject area. You can find these at the Reception and Information Desk in the foyer of the Main Library, and in the site libraries.

Information clinics

If you need further help in researching a subject for an assignment you can book a session with a subject specialist in Library Services. You will be given help and advice on how to research your subject, which sources to use, help with electronic sources etc. Details are available from www.intranet.birmingham.ac.uk/library/subject or the Reception and Information Desk in the Main Library.

Other relevant guides

Other guides you may find useful include:

Databases for Engineers

Preparing and Quoting References using the Harvard System

Business Electronic Journals

Effective Searching of Electronic Resources.

You can find these guides on the web at:

www.Intranet.birmingham.ac.uk/library/databases

All Library Services documents are available in other formats, please contact Library Services on 0121 414 5828 or www.library.bham.ac.uk/help/ask.shtml for information

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