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# UT/ITC Module 11: MSc Research Skills

## Assignment 1: Literature review skills

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## 1 Introduction

This exercise provides practice in the **skills** you will need to do a proper literature review in your research proposal phase.

After completing this exercise you should be able to:

1. **Find relevant references** for your research, using the resources of the **ITC Library**;
2. Use the Mendeley reference manager<sup>1</sup> to **organize** your references;
3. **Import** references and abstracts from on-line databases to the reference manager;
4. Use the reference manager's interface with a document preparation system such as Microsoft Word to **prepare documents** with properly-formatted citations and reference lists.

Once you learn these techniques, your literature reviews and thesis writing will go much faster. Additionally, you will have perfectly-formatted bibliographies and a consistent reference list.

For this exercise the preferred reference manager is Mendeley (owned by Elsevier) and the preferred document preparation system is Microsoft Word; during the proposal and thesis phase you are free to choose other options, as long as the output conforms to ITC thesis standards<sup>2</sup>.

**Note:** There are many other reference managers<sup>3</sup>. Two in common use at ITC are the open-source Zotero<sup>4</sup> and the commercial EndNote<sup>5</sup>. There are also other document preparation systems. Two in use at ITC are Open Office<sup>6</sup> (an open-source office suite) and L<sup>A</sup>T<sub>E</sub>X<sup>7</sup>, generally using the B<sup>B</sup>T<sub>E</sub>X system to organize and format references; the JabRef reference management software<sup>8</sup> uses B<sup>B</sup>T<sub>E</sub>X as its native format. ITC supports Mendeley, EndNote and Word.

**This is a difficult exercise!** Make sure to allocate enough time now to learn these techniques and apply them properly – it will save you time in the proposal and thesis stages.

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<sup>1</sup> <http://www.mendeley.com/>

<sup>2</sup> see *Research Concepts & Skills Volume 3: The UT/ITC thesis process* §2.1.4 “Conformance to specifications”)

<sup>3</sup> [http://en.wikipedia.org/wiki/Comparison\\_of\\_reference\\_management\\_software](http://en.wikipedia.org/wiki/Comparison_of_reference_management_software)

<sup>4</sup> <http://www.zotero.org/>

<sup>5</sup> <http://www.endnote.com/>

<sup>6</sup> <http://www.openoffice.org/>

<sup>7</sup> <http://www.latex-project.org/>

<sup>8</sup> <http://jabref.sourceforge.net/>

## 2 Resources

The point of entry for all your database searches should be the ITC library<sup>9</sup>. There is little reason to begin elsewhere.

The ITC Library has developed an **Information Literacy Course**<sup>10</sup> in which you learn to identify, to locate and to evaluate information. This course also includes a **self-test** with which you can evaluate your current level of information literacy. It also explains the use of Mendeley, with links to a manual and a tutorial exercise covering:

- Installing and setting up Mendeley;
- Building a list of references with Mendeley;
- Importing references from online databases;
- Inserting citations into a Microsoft Word document;
- Formatting the citations and a list of references in a Microsoft Word document.

## 3 Assignment

### 3.1 Part 1: Finding literature

Find **seven (7) relevant** and **up-to-date** works for your thesis topic. Since a purposes of this exercise is to familiarize you with the diverse resources of the ITC library, you **must** use different resources as indicated below.

All of these resources can be reached from the library's "All databases alphabetically" web page<sup>11</sup>. If you are not sure how to find information using these database please see the Information Literacy Course, Module 5.

You must find the following seven items:

1. One (1) **textbook** which covers the basic principles of some discipline related to your thesis topic. Your topic may be too narrow to have its own dedicated textbook, in which case select a text that covers some important aspect of the research.

Recall, a textbook is "a published book meant to introduce a subject for classroom teaching or self-study" (Research Skills text, Volume 2 §1.3.4).

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<sup>9</sup> <http://www.itc.nl/Pub/Home/library>

<sup>10</sup> <http://www.itc.nl/Pub/Home/library/Library-Guides/LiteracyCourse>

<sup>11</sup> [http://www.itc.nl/Pub/Home/library/Search-for-information/all\\_databases\\_alphabetically.html](http://www.itc.nl/Pub/Home/library/Search-for-information/all_databases_alphabetically.html)

- Find this with **E-B-L e-Books** (link: “All databases”; “E-B-L e-Books”).
2. One (1) **review article** (Elsevier) or **book chapter** (Springer Earth and Environmental Science eBook Collection) covering the recent state-of-the-art in your topic.
- Recall, a review article “summarizes a set of research articles, surveying the state-of-art in a particular field” (Research Skills text, Volume 2 §1.3.1).
- Find this with **Elsevier Science Direct** (link “Science Direct / Elsevier”) or **Springer Earth and Environmental Science eBook Collection** (link: “All databases alphabetically | Springer Earth and Environmental Science eBook Collection”)
3. Three (3) **research papers** directly relevant to your topic.
- Recall, a research article “describes an original investigation, method, or procedure” (Research Skills text, Volume 2 §1.3.1).
- Find one of these with **Web of Science** (link: “Web of Science”).
  - Find another with **SpringerLink** (link: “SpringerLink Journals”).
  - Find another with **one** of the following **subject-oriented database** (link: “All databases alphabetically”):
    - ACM Digital Library;
    - IEEE Digital Library;
    - OICRF (International Office of Cadastre and Land Records);
    - Geobase
4. One (1) **ITC thesis** (MSc or PhD) relevant to your topic.
- Find this with **Adlib** (link: “Adlib; ITC Library Catalogue”)
  - **Note:** Carefully check and, if necessary, edit the reference in the reference manager (not the document). For searching purposes PhD thesis supervisors are listed as co-authors in Adlib, but this is not correct in the reference, which should only be credited to the thesis author.
5. One (1) **web page** that is **not a copy of printed material**, i.e., information only available as a web page.

- Find this with **Google**, or a general-purpose search engine (e.g., Bing, Yahoo), or with a science-oriented search engine; you can find a list of these on the library web site<sup>12</sup>.
- This is **not** a web version of a book or journal article – you should find a web page that is the primary source of its information.

In the report, you **must state your search strategy** and **how many items were returned at each stage** (see sample output below). Except for the ITC thesis and web source searches, you must find between **6** and **60** hits; if your first search is too detailed or too broad you must adjust accordingly; see the Research Skills text, Volume 2 §1.5.5 for ideas.

You must at least skim the full text of the seven sources you select, in order to write a coherent story (see below, §3.3). This means you **must be able to find the full text on-line or in the ITC library**. You will not have time to visit other libraries or ask for references by inter-library loan, although you can and should do this as necessary when preparing the literature review for your thesis proposal.

### 3.2 Part 2: Building a bibliographic database

For each of the seven selected references, add an entry for them in a **bibliographic database**, preferably Mendeley.

Most of the sources listed in Part 1 provide a way to **export** citations to a bibliographic database; see the ITC tutorials or instructions in the source for details.

However, in all cases make sure to **check the entry** in the bibliographic database (i.e., do not trust the import).

1. Are the **title**, **author names**, and **source** (e.g., journal) consistently in mixed-case?
2. Is the **reference type** correct (article, book, edited book, book chapter, thesis, electronic source ...)?
3. Is the **author list** correctly-formatted (one per line; comma after corporate authors; consistent use of initials and full names ...)?
4. Are the **title**, **journal**, **publisher** etc. complete as appropriate to the reference type?

<sup>12</sup> [http://www.itc.nl/Pub/Home/Library/Other-sources-of-information/search\\_engines](http://www.itc.nl/Pub/Home/Library/Other-sources-of-information/search_engines)

### 3.3 Part 3: Putting the selected references in context

Write a *short* text (100–200 words) **explaining** the relevance of each reference, and **citing** the reference correctly. Using Microsoft Word with the Mendeley plug-in, insert the citation with the appropriate Word toolbar button or menu command, and if necessary edit the citation (e.g., to remove the author name if you’ve already included it in the text). The citation must be properly placed with respect to the statement to which it refers.

This is *not* a full literature review! The short text is only to put the references in **context** and to prove their **relevance**.

### 3.4 Part 4: Formatting a reference list

Format the reference list, with the title “References”, using the **APA-6<sup>th</sup>** output style. For this exercise, **you must use this style!** There is no required ITC style; however sufficient information must appear in the citation so that others can find the reference (Research Skills text, Volume 2 §1.7.3); the APA-6<sup>th</sup> style is one that ensures this.

In Microsoft Word with the Mendeley plug-in, use the appropriate Word toolbar button or menu command to format the reference list.

### 3.5 Required output

1. A **Microsoft Word** document naming the **topic**, with **all** seven references, and **only** the seven references, cited two ways:
  - in a list with **the type of each reference, how it was located** (i.e., the search strategy), and the **number of hits** generated by the search strategy; the search strategy should be explained in sufficient detail for someone else (e.g., the grader) to find the same reference with the same strategy;
  - in **one** (or at most a few) **coherent paragraphs** briefly describing each reference and its relevance to the topic.

The document must also have a **reference list**, with the heading “References”, with the seven references formatted in the **APA-6<sup>th</sup>** output style.

2. The document must include your **name, course, and ITC e-mail ID**.

**Submit the file in Blackboard**, both with your ITC e-mail ID and the exercise number as part of the file name, and extension **.doc** or **.docx** (Word document).

For example, **y-p-ma\_ex1.doc**. Please include your UT/ITC e-mail ID and real name in the text document.

## 4 Sample output

(File name: y-p-ma\_ex1.doc)

Student: Yipi Ma (y.p.ma@student.utwente.nl)

Research topic: **Digital soil mapping**

### Search strategy

#### 1. **Textbook:** Hengl & Reuter (2008)

Database: E-B-L e-Books

Search strategy: Advanced Search, Search for: exact keyword phrase “digital soil mapping”, from 2005-2014; 13 hits; sort by publication date.

Scan list for probable textbooks (view details); select “read online (browse)” to check relevance and whether intended as a textbook. Evidence in the book description:

“This is a manual of state-of-the-art methods to serve the various researchers who use geomorphometry.”

#### 2. **Review article:** Grunwald (2009)

Database: ScienceDirect / Elsevier ; journals.

Search strategy: digital and soil and map\* in Abstract, Title, Keywords AND review or summary or overview in Abstract, Title, Keywords; in Earth & Planetary Science journals; 2006-present; 16 hits.

Look for the review articles; checked full-text of article from ScienceDirect to ensure it is a review.

#### 3. **Research paper (1):** Mora-Vallejo et al. (2008)

Database: Web of Science.

Search strategy: search for topic "digital soil mapping" in Science Citation Index Expanded (SCI-EXPANDED), i.e., deselected the other citation databases, 2006-2011; 69 hits; refine results by: (1) limit to subject area Soil science; (2) limit to document type article; 39 hits; sort by relevance, select second in list.

#### 4. **Research paper (2):** Sorokina & Kozlov (2009)

Database: SpringerLink Journals.

Search strategy: Advanced search: only journals; title and abstract: digital and soil and mapping, since 2006; 26 hits; limit to earth and environmental sciences; 15 hits.

5. **Research paper (3):** Behrens et al. (2010)

Database: Geobase

Search strategy: Search for Digital AND soil AND mapping in title field; 2006 to 2011. 27 hits; sort by 'relevance'; scan list for interesting article.

6. **ITC thesis:** Cambule (2013)

Database: ADLIB.

Search strategy: only ITC academic output; Title: 'soil\* map\*'; default is 'and' to connect the terms; sort by year; since 2005; 30 hits; second hit is a thesis, title refers to digital soil mapping.

7. **Electronic source:** European Commission - Joint Research Centre Institute for Environment and Sustainability (1995-2012)

Database: Google.

Search strategy: exact phrase "digital soil mapping"; scan the first page of results; find the European Soil Portal information on DSM.

### Text putting references in context

Trends in digital soil mapping (DSM) approaches have recently been reviewed by Grunwald (2009), who concluded that there is and can be no uniform method for all situations. For example, small-scale mapping in the tropics (Mora-Vallejo et al., 2008) and studying soil patterns (Sorokina & Kozlov, 2009) use different covariates and analytical approaches. Many studies aim to map the critical soil constituent organic carbon, (e.g., Cambule, 2013). Most DSM approaches use terrain analysis (e.g., Behrens et al., 2010) which is explained in the textbook edited by Hengl & Reuter (2008). The European Commission has sponsored several projects in DSM, as listed on their web site (European Commission - Joint Research Centre Institute for Environment and Sustainability, 1995-2012).

### References

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