# Assignments Mathematical Institute

Library Instruction February 17, 2016, MI

## Feedback

If you want to have feedback on your search for the bachelor project, or have any specific questions, you are welcome to send them to subject librarian Rutger de Jong, [r.m.de.jong@library.leidenuniv.nl](mailto:r.m.de.jong@library.leidenuniv.nl)

## Introduction

The exercises for this course on information literacy are meant to give you an overview of the services of the Universitaire Bibliotheken Leiden and to introduce you to strategies for finding the right information to do your research. Most assignments start out from the Catalogue of the university library. Please sign in with your ULCN account to get full access. <http://catalogue.leidenuniv.nl>

## Citing

There are many different styles with which you can refer to an article (cite). One of the best known examples is the APA-style 6th generation you will be using in these exercises. It is important to keep your references consistent so people can easily find them in the library. Some examples are

**Book**:

Author, A. A. (Year of publication). Title of work: Capital letter also for subtitle (2nd ed.). Location: Publisher.

Nahin, P. (2010). *An imaginary tale : The story of √-1*. Princeton, NJ [etc.]: Princeton University Press.

**Chapter in book:**

Author, A. A., & Author, B. B. (Year of publication). Title of chapter. In A. A. Editor & B. B. Editor (Eds.), Title of book (pages of chapter). Location: Publisher.

Eie, M. (2013). Euler Decomposition Theorem. In *The Theory of Multiple Zeta Values with Applications in Combinatorics* (pp. 85-121). World Scientific Publishing Pte.

**Article:**

Author, A. A., Author, B. B., & Author, C. C. (Year). Title of article. Title of Periodical, volume number(issue number), pages. http://dx.doi.org/xx.xxx/yyyyy

Weil, A. (1984). Euler. *The American Mathematical Monthly,* *91*(9), 537-542.

Using a reference manager makes citing a lot easier. Have a look at the Mendeley description at the end of this document.

## Exercise 1: Library Catalogue

Go to the Library Catalogue and do a search in ‘All contents’ with ‘golden ratio’.

1. How many results do you find? Are they all relevant?
2. How many different resource types are available?
3. Search within All Contents for ‘”golden ratio”’. How do the results change?
4. Restrict the selection to e-books. Open the online edition of ‘The golden ratio and Fibonacci numbers’. Go to chapter 6. What are the seed values for the Lucas numbers?
5. Now search within ‘Leiden Collections’ (where the printed books from Leiden can be found) for the book ‘Fibonacci numbers’ by Vorob’ev. Where can you find this book in the library?
6. Have a look at the tab ‘Special Collections’. Here you will find historical collections of great value. Can you find the original letters from Pascal to Huygens? They can be viewed in the central university library at Witte Singel.

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## Exercise 2: MathSciNet

Go to Find Databases and open MathSciNet. In this exercise we will have a look at the Mathematical Subject Classification.

1. If you already have a research subject, check what classifications fit your subject best (try to find two). If it is a recent classification, check what older category it would also fit. If you do not yet have a subject, check for Fibonacci primes. Use ‘Free tools’ => ‘Search MSC’.
2. Now we will check by doing a search on keywords in MathSciNet. Choose to search in anywhere and choose some keywords for your subject or use ‘Fibonacci prime\*’. Check out the MSC’s mentioned. Which are the most common? Are they the same as the ones you found for question a?
3. Go to the tab citations in the search screen. Search on subject and enter the MSC-category you think most likely to contain your answer. From the most cited papers and books, pick a journal article that is closest to the subject you are looking for. Read it and tell in one or two sentences (in your own words) what the most important findings are. Give a correct reference in APA-style to this article.
4. From the references or citing articles, pick one you think interesting and do the same as you did for the article in c.
5. Go back to the publication search. Look for an article using at least one keyword with synonyms (cat OR feline) and a MSC-category (choose primary/secondary MSC). Write down your search terms and category. Are the results relevant?
6. Is there anything you would like to change to increase the number of results? Write down what and why.
7. Now repeat the search but replace the MSC-field with a keyword with synonyms describing the MSC-classification. Write down your search terms and category. How do the results compare to the search in f?

## Exercise 3: Zentralblatt MATH //iets inkorten

Go to find databases and open Zentralblatt MATH. We will first repeat the search from MathSciNet to see the differences in contents they cover.

1. Repeat the search from 2g with a ‘Structured Search’ in Zentralblatt. Do the results differ a lot from those ones found with MathSciNet? What might be the cause?
2. Check the right column. In which journal can you find the most articles on this specific subject?
3. Who is the most active mathematician for the search terms you used?
4. Check out his/her research profile. Is there a paper/book you think interesting but hadn’t found before? Note it down and give a correct citation in APA-style.
5. Check for a common formula on your subject or use Binet’s formula F_n = \frac{\varphi^n-\psi^n}{\varphi-\psi} = \frac{\varphi^n-\psi^n}{\sqrt 5}. Make sure to use a question mark in front of your variable names (this helps find the formula even if someone uses x instead of \rho)!   
   For example Fermat’s theorem: ?a^?n + ?b^?n=?c^?n   
   Check if you can find an interesting article. Note it down in the APA-style.

## Exercise 4: Other databases

Go to Web of Science (Find Databases) or Google Scholar. Enter the same search terms you used in 2g and 3b. Note down:

1. The database you chose.
2. How the results differ (number, relevancy, citations of the article, publication type)
3. Why and when these databases are interesting for mathematicians
4. What you could do to improve the results if necessary.

## Exercise 5: Articles

Find the following references and answer the question. They are all available at Leiden University.

1. Nescolarde-Selva, J., Usó-Doménech, J. L., & Lloret-Climent, M. (2015). Mythical systems: mathematic and logical theory. *International Journal of General Systems*, *44*(1), 76–97. <http://doi.org/10.1080/03081079.2014.947977>  
   Answer: from the second paragraph, what does every myth involve?
2. Vaintrob, A. (1997). Melvin–Morton Conjecture and Primitive Feynman Diagrams. *International Journal of Mathematics*, *08*(04), 537–553. <http://doi.org/10.1142/S0129167X97000275>  
   Answer: from the first paragraph, how can the Jones Polynomial V of knots be constructed?
3. Tropp, J. A. (2004). Greed is good: Algorithmic results for sparse approximation. *IEEE Transactions on Information Theory*, *50*(10), 2231–2242. <http://doi.org/10.1109/TIT.2004.834793>   
   Answer: what is the core algorithmic question according to the introduction?

## Exercise 6: Arxiv

Arxiv.org is a database of pre-print and Open Access articles. Look up the following entries and answer the questions:

1. Uffe Haagerup submitted a preprint in arXiv on certain polynomials. Give the Arxiv-identifier of this article.
2. Gilles Pisier submitted an article on Khintchine inequalities in 2014. In it he refers to wo out of three parts from a standard work. What standard work is it and where can we fin dit in our library?
3. Has Pisiers article already been published apart from the preprint on Arxiv? Give a correct citation in the APA-style.

## Exercise: Lending

The subject librarian will look-up a book with MSC 94A60 and pass it on: Garrett, P. (2001). *Making, breaking codes : An introduction to cryptology*. Upper Saddle River, NJ: Prentice Hall.

Fill in the lending form:

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| **Barcode (inside front cover):**  **Subject heading & booknr.** (spine of the book):  Author:  Title:  Volume/year: | **Lent to:**  **Pers. Nr. LUcard, Choose s / m / g**  **8 figures:**  No library pass or student card? Please fill in (working)address & phone number |
| The undersigned declares to have borrowed the abovementioned book on / / 20 for the duration of **21 days**, under the conditions for borrowing as stated by the Leiden University Libraries.  [www.library.leiden.edu/mathematics/natural-sciences](http://www.library.leiden.edu/mathematics/natural-sciences)  <http://bibliotheek.leidenuniv.nl/wiskunde-natuurwetenschappen> | |

## Mendeley

Mendeley makes it easy to follow what you have read and why you read it. To install Mendeley, go to [www.mendeley.com](http://www.mendeley.com) , create a free account (so you can synchronize your references and share with others) and download the software for your platform. Mendeley is freely available on Windows, Mac OS X, Linux, iOs and Android.

After installing Mendeley and its plugins, you will see a new tab ‘References’ in Word/Libre Office. If this is the document you answer your questions in, go to the end of the document with your cursor and click on ‘Insert Bibliography’. To add a citation, click on the Insert Citation button underneath References. After you have added the first citation to Mendeley, you can choose the citation style. In these assignments we will use the APA sixth edition style.

Adding references to Mendeley can be done by hand, by adding a pdf or by adding bibliographic data, for example your search results from Web of Science. Have a look at the tutorials on the Mendeley website: <https://community.mendeley.com/guides>

For specific information on coupling Mendeley to Bibtex, have a look at the following tutorials: <http://barrington.cranfield.ac.uk/help/BibTeXMendeley.pdf>   
[http://libguides.mit.edu/c.php?g=176186&p=1159535#9](http://libguides.mit.edu/c.php?g=176186&p=1159535)

Mendeley also has a web version in case you can’t install on the campus computers. This will be synchronized with your desktop version of Mendeley. In this case you have to add the correct citations yourselves in the following APA-style, have a look at <http://www.apastyle.org/learn/tutorials/basics-tutorial.aspx> for more information.

To add a reference from Zentralblatt MATH look for the button called BibTex. In MathSciNet check for the button Alternative Formats and choose BibTex.