UConn REU 2020 MathSciNet and BibTeX Guide

Setup:

- Download a template to your computer then upload it to your Overleaf project, or copy the template to create a new Overleaf project: Overleaf template which contains a .bib file

- Change the name of the Overleaf project so that it has your name. Share the Overleaf project with me (after you are ready to share).

- Change the author's name to your name.

Creating BibTeX entries (no submission are required from this section)

0.1 How to manually type a BibTeX entry

a. We will create a BibTeX entry for a Calculus book by Stewart. Search for "Stewart Single Variable Calculus Early Transcendentals 8th ed" in a search engine. Try some of the links that show up, for example, the link of the publisher, CENGAGE LEARNING. Note the title, the edition (8th), the author (Stewart, James), and the published year (2016).

b. With the `bib.bib` template file as a guide, create an book entry for Stewart. The entry should start with

<p align="center"><code>@book {key</code></p>

The `key` of the entry could be `Ste16`, `Stewart`, `Calculus` or another name you prefer. For consistency, you should pick a convention and stick to it. For example, one of my conventions is to write the first three letters of the author's first surname (if the reference is a single-author publication) or the last-name initials of the authors (if there are two or more authors) followed the last two digits of the year of publication.

c. To check that you've added the new bib item correctly, please go to your `.tex` file and type a sentence citing this reference (assuming you picked the key `Ste16` for your BibTeX entry):

<p align="center"><code>It is well-known that e^x is its own derivative, for example, see \cite{Ste16}.</code></p>

Recompile. Do you see Stewart's book at the bottom of the PDF, under "References"? Did an error or warning appear?

d. Replacing `\cite{Ste16}` with

<p align="center"><code>\cite[Section 11.10, Exercise 84]{Ste16}</code></p>

would produce "[Ste16, Section 11.10, Exercise 84]" in your PDF file.

0.2 How to use (UConn) MathSciNet to generate a BibTeX entry

a. Go to UConn Library Math and Stat Subject Guide: https://guides.lib.uconn.edu/math.

b. Find the list of "Key Databases" and click on MathSciNet, which you have access to with your UConn NetID.

c. As an example, we will use mathSciNet to generate an entry for a Calculus book written by Spivak.

- On the author's field, type "Spivak" or "Spivak, M." and on the title's field, type "Calculus on manifolds".
- After you've found the correct publication, click on it to see a short review of this publication.
- On the drop-down menu, select "BibTeX." This should take you to a page containing a BibTeX entry of the book in question: https://mathscinet-ams-org.ezproxy.lib.uconn.edu/mathscinet/search/publications.html?fmt=bibtex&pg1=MR&s1=209411.
- Copy this entry and paste it to your `.bib` file. Replace the key of the entry from `MR0209411` to another name that you can easily remember, following your convention. If you follow my convention you would use `Spi65` as the key.

d. Check for errors by citing this reference in `intro3.tex`, for example (assuming you picked the key `Spi65`),

<p align="center"><code>To read more about bump functions, see \cite{Spi65}.</code></p>

Recompile. Does Spivak's book show up at the bottom of the PDF, under "References"? Did an error or warning appear?

0.3 How to use Google Scholar to generate a BibTeX entry

a. Go to scholar.google.com. Search for an article, for example "Cluster algebra I: Foundations by Fomin and Zelevinsky"

b. You would be able to see how many times an article has been cited in other publications.

c. Click on the symbol which looks like a quotation mark. Click on the link to "BibTeX".

d. Copy this entry, and paste it into your .bib file.

e. Change the key from `fomin2002cluster` to something that is easier for you to remember, for example, `FZ02`.

f. To check that you've created the new bib item correctly, go to your `intro3.tex` file and type a sentence citing this reference (assuming you picked the key `FZ02` for your BibTeX entry):

```
Cluster algebras were introduced at the beginning of this century in the seminal
                              paper \cite{FZ02}.
```

Recompile. Does the paper by Fomin and Zelevinsky show up at the bottom of the document, under "References"? Did an error or warning appear?

0.4 How to creating a BibTeX entry for a website like Wikipedia

a. For example, go to the Wikipedia entry for the Pingala–Khayyam–Yang Hui–Pascal's Triangle.

b. Click the link "Cite this page" under tools. Scroll down to "BibTeX entry". Copy the second option which uses "howpublished" and paste this bib item in your `.bib` file.

c. Use this same format when you cite other websites. For more BibTeX information, read creating-and-managing-bibliographies-with-bibtex-on-overleaf.

1 Beginner Tasks (due during week 6 of REU, ending July 3, 2020)

Go to UConn MathSciNet: https://mathscinet-ams-org.ezproxy.lib.uconn.edu/mathscinet/.

1.1 Task: Searching for a book

a. On the main UConn MathSciNet page, search for a book with title "Catalan numbers" and author "Stanley, Richard". Skim the review of the book.

b. Click on the link "From References". As of June 29, 2020, it says "From References:89", which means the link will show you a list of 89 publications which cite this book. Look at that list for a few minutes (click on a few links and buttons, etc).

1.2 Task: Searching for a published article

a. Go back to the home UConn MathSciNet link. Search for the survey paper with title: "From the Tamari Lattice to the Cambrian lattices and beyond" and author: Reading, Nathan. This should take you to the page for MR3221544 containing a review of the paper by Kyle Petersen. Skim the review.

b. Click on the button "UCONN Full Text". A smaller window should pop up. In this case, UConn owes a copy of the book ("Associahedra, Tamari lattices and related structures") containing this paper. You can read online or download (one section at a time). Follow the links to download just the section "From the Tamari Lattice to the Cambrian lattices and beyond". Put this file in your folder for REU-related materials. From now on, use this published version of the paper (instead of the arxiv.org version).

c. Go back to the larger window (the page for MR3221544). Look for a drop-down menu/button which says "Select alternative format", and select "BibTex".

d. You should be taken to the following page: https://mathscinet-ams-org.ezproxy.lib.uconn.edu/mathscinet/search/publications.html?fmt=bibtex&pg1=MR&s1=322 Copy the text on this page, starting from @incollection and ending with a closing curly brace.

e. Go to the Overleaf project you are editing. Go to the .bib file. You will now add this bibitem to the file. Do a search (Ctrl-F or Apple-F) for the title of this article to make sure this bibitem is not already in the .bib file.

Scroll through the .bib file to look for authors whose last names are close to "Rea" alphabetically, then paste the bibitem (that you have just copied from https://mathscinet-ams-org.ezproxy.lib.uconn.edu/mathscinet/search/publications.html?fmt=bibtex&pg1=MR&s1=3221544 in the appropriate place (alphabetically).

It doesn't matter where you place the bib item in the .bib file, but it's good practice to organize your .bib file so that you can easily look for things.

f. In this bib item, change the key name MR3221544 to something you can remember, like "Rea12" or "Reading12" or "CambrianSurvey". The key name your choose does not affect the appearance of the PDF.

g. To make this paper appear in your references, go to the .tex file. Type a sentence citing this new bibitem:

```
For a survey on Cambrian lattices, see \cite{Reading12}.
```

Recompile to check that this new bibitem is now listed under "References" at the bottom of the PDF.

1.3 Task: MathSciNet, Interlibrary loan and contacting librarians at your college

Go to your college library website and log into MathSciNet (this should require logging into your college system). If you are having trouble, email or call a librarian at your college, or your math professor (who has published a paper in the past few years) "How do I access MathSciNet?"

Save the link to your college MathSciNet so that next time you can get there in one click. You will need to access MathSciNet often these to write your report.

a. Go to your college MathSciNet. Search for the same book with title "Catalan numbers" and author "Stanley, Richard". Search also for a book with title "Young Tableaux" (or "Young Tableaux With Applications to Representation Theory and Geometry") and author "Fulton, William".

b. Click on a button on the right at the same location as "UCONN Full Text" (but has your college name). A new (maybe small) window should pop up. If your college library owns an electronic copy, there may be a link to download or read it immediately. Go to the main search page of your college library and do a search (your college may own an electronic copy but it is not linked via MathSciNet).

c. If you college doesn't own an electronic copy, there may be a "Request a PDF" (or "request an interlibrary loan") to get an electronic copy of this book. Otherwise, go to the main search page of your college library and do another search. Figure out a way to request an electronic loan of the book "Catalan numbers" via Interlibrary Loan. Email your college librarian if you can't figure out how to do this.

1.4 Task: Google and Google Scholar

For preprints (not yet published materials, usually posted to the arxiv.org) or new publications (that are not yet available on MathSciNet), we can use Google and Google Scholar

a. Go to scholar.google.com. Search for "Cambrian acyclic domains".

You should see the article on the top of the list of search results (if you do this in June 2020), since there is a paper called "Cambrian acyclic domains: counting c-singletons".

b. Click on the link "Cited by . . . " to see the list of papers which have cited this article.

c. Click on the link "All N versions" to see all versions of this article. The most current version is the version published in the journal called "Order", which we will use.

d. Click on the symbol which looks like a quotation mark. Click on the link to "BibTeX".

e. Copy this entry, and paste it into your .bib file (sorted in alphabetical order by authors).

f. Change the key from `labbe2020cambrian` to something that is easier for you to remember, for example, `LabbeLange` or `LL20`.

g. To check that you've created the new bib item correctly, go to your `.tex` file and type a sentence citing this reference (assuming you picked the key `LL20` for your BibTeX entry):

```
The structure of η-fibers which are singletons are studied in  \cite{LL20}.
```

Recompile. Check that Labbe and Lange's paper show up at the bottom of the document, under "References".

1.5 Task: citing a website

1. Go to your .bib file. Copy and paste the bib entry from the Wikipedia page example (see Section 0.4).

2. Replace the key with a new name (for example, `blog`), Replace the wikipedia address with the address of the following blog entry: https://realopacblog.wordpress.com/2019/11/24/a-localized-version-of-greenes-theorem/, and replace the date of access to today's date.

3. We will make this website show up in your references. Go to the Acknowledgement section in the .tex file. Type the following sentence:

```
This article was inspired by a blog post of J. Lewis \cite{blog}.  We thank J. Lewis for
                          many helpful discussions.
```

2   Pre-presentation tasks (due the day before your presentation — don't submit this too early)

Do these after you are almost done understanding your paper/s.

Create a new Overleaf project with a .tex and a nameofbibfile.bib file. Make sure to put the line

$$\backslash\text{bibliography}\{\text{nameofbibfile}\}$$

at the end of your .tex file (above \end{document}).

2.1 Task: Your paper's references

a. Look at the list of references at the bottom of your paper/s. Pick several references that you think will be useful to look at.

b. Find and download them either using UConn MathSciNet, your college MathSciNet, Google. Most papers written in this century are uploaded on arxiv.org (if you don't have immediate access to the published versions).

   - Use ctrl-F (Apple-F) to find the locations where your paper/s are cited in these publications.
   - Copy the bibtex info of these few references from MathSciNet (or Google Scholar, if the references are preprints). Paste the bibtex info into your nameofbibfile.bib file.
   - Cite these references in your .tex file (so that they show up in the references section of your PDF) and briefly explain why your paper cites these references.

2.2 Task: Publications that cite your paper

a. Go to your paper/s in MathSciNet (either UConn or your college, whichever seems easier to use). Look up the list of published materials which cite your paper/s by clicking on the link "From References: N".

b. Using Google or Google Scholar, look up the list of materials (including preprints and other unpublished materials) which cite your paper/s by clicking on the link "Cited by: N"

   - Skim through the first 100 publications on the list produced by step (a) and (b) above.
   - Pick one or two publications that catch your eye or you think are most relevant for this summer. Download these.
   - Use ctrl-F (Apple-F) to find the locations where your paper/s are cited in these publications.
   - Spend some time (but no more than one hour) to figure out how or why your paper/s are cited by these publications.
   - Copy the bibtex info of the publications from MathSciNet. Paste the bibtex info into your nameofbibfile.bib file.
   - Cite the publications in your .tex file (so that they show up in your references) and briefly explain why these publications cite your paper/s.