

UNIVERSITY OF OSLO

LaTeX & Overleaf

MAT2000/STK-MAT2011

Yutong Shan
Senior academic librarian for mathematics
UiO Science Library

28 January 2026



LaTeX is THE standard for typesetting math!

LaTeX Math Showcase

short examples of equations, symbols, and matrices

Inline and Display

Inline math: the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ and a simple sum $\sum_{n=0}^{\infty} r^n = \frac{1}{1-r}$ for $|r| < 1$.

A displayed equation with a label:

$$\hat{f}(\xi) = \int_{-\infty}^{\infty} f(x) e^{-i\xi x} dx$$

Aligned equations

Systems and multi-line calculations:

$$\begin{aligned} \nabla \cdot (\nabla \times \mathbf{A}) &= 0 \\ \nabla \times (\nabla \phi) &= 0 \end{aligned}$$

Limits, derivatives, and integrals

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1, \quad \int_0^{\infty} x^{\alpha-1} e^{-\beta x} dx = \frac{\Gamma(\alpha)}{\beta^{\alpha}}$$

Sums, products, and combinatorics

$$\sum_{k=0}^n \binom{n}{k} = 2^n, \quad \prod_{p \text{ prime}} (1 - p^{-s})^{-1} = \sum_{n=1}^{\infty} n^{-s} \quad (\Re s > 1).$$

Piecewise and cases

$$f(x) = \begin{cases} x^2, & x \geq 0, \\ -x, & x < 0. \end{cases}$$

Matrices and determinants

Small matrices and common delimiters:

$$A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}, \quad B = \begin{bmatrix} 0 & -i \\ i & 0 \end{bmatrix}.$$

A 3-by-3 matrix and its determinant:

$$M = \begin{vmatrix} 1 & x & x^2 \\ 1 & y & y^2 \\ 1 & z & z^2 \end{vmatrix} = (y-x)(z-x)(z-y) \quad (\text{Vandermonde}).$$

Block matrices and small inline matrix:

$$\begin{pmatrix} A & B \\ C & D \end{pmatrix}, \quad \begin{pmatrix} a & b \\ c & d \end{pmatrix}^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}.$$

Inline smallmatrix (useful in text): $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$.

REQUIRED FOR:

- Publishing
- Master's obligs + thesis
- and...
- THIS COURSE!!!

Logic and set notation

$$\forall \varepsilon > 0 \exists \delta > 0 \text{ such that } |x - a| < \delta \Rightarrow |f(x) - L| < \varepsilon, \\ A \subseteq B, \quad A \cup B, \quad A \cap B, \quad A \setminus B, \quad \emptyset.$$

A compact aligned derivation

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3, \\ \text{so } \frac{d}{da}(a+b)^3 = 3(a+b)^2.$$

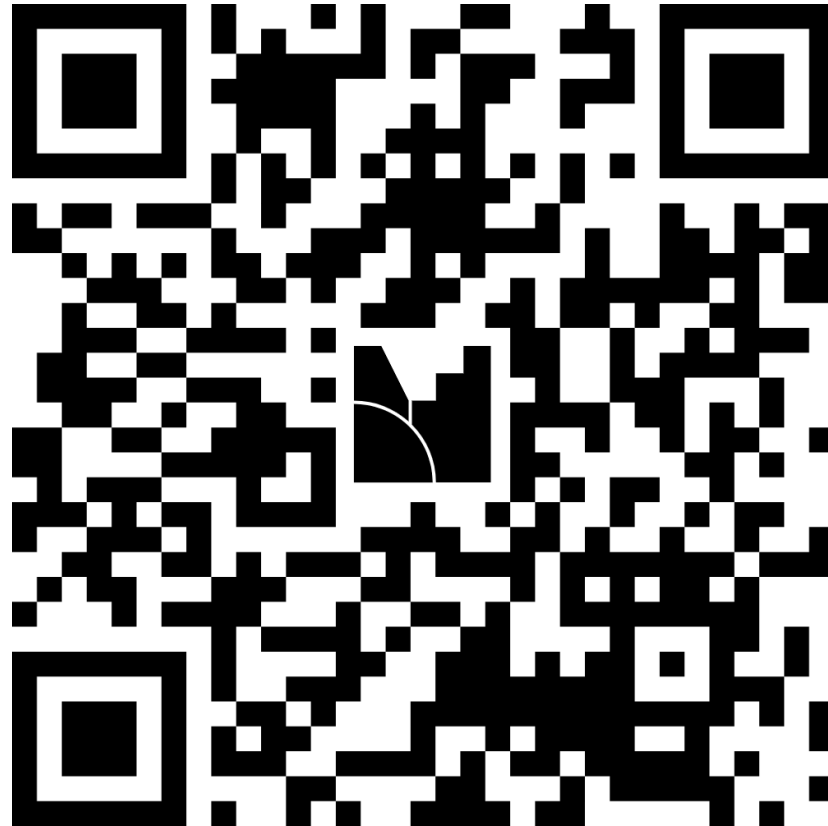
This file demonstrates many common constructs: inline math, displayed equations, aligned blocks, sums/products, integrals, cases, matrices (parentheses, brackets, determinants), operators, and special symbols. Tweak packages (e.g., amsmath, mathtools) to access more environments.



UNIVERSIT
OF OSLO

(LaTeX code generated with UiOGPT)

LaTeX experience: have you...



<https://www.menti.com/alqc3si3p62i>

Plan

- Obligs requirements
- Quick review: basics of LaTeX + Overleaf
- MAT2000 writeup template
- Bibliography + references
- (Zotero + Tikz)



Your Oblig requirements (due 19 Feb 2026)

The assignment must be 2-3 pages written in **LaTeX, based on the UiO template for Bachelor's theses and contain the following:**

- ☐ Title
- ☐ Abstract
- ☐ Introduction
- ☐ Chosen topic or result presented in a numbered environment
- ☐ Mathematical notation
- ☐ A picture, illustration, figure, graph or table with caption
- ☐ Clickable cross references
- ☐ Clickable citations and references in text in a chosen style
- ☐ Bibliography in a chosen style
- ☐ A very short plan for the project



Online LaTeX text editor + compiler

Link your account with UiO email to access **pro licence** (since 2025):

- unlimited number of collaborators
- Significantly enlarged compilation time
- record of full document history



UNIVERSITY
OF OSLO



UNIVERSITY
OF OSLO

University of Oslo on Overleaf

[Overview](#)[Quick Start](#)[Templates](#)[FAQ & Help](#)

Text and document
instructions go here

PDF document preview
(generate using 'Recompile')

Files go here
(text, bibliography,
template, figures)

File outline
(auto-generated)

Menu

LaTeX_kurs_demo1

ReviewShareSubmitHistoryLayoutChat

main.texoverleaf-logo-primar...refs.bib

Files go here
(text, bibliography,
template, figures)

File outlineIntroductionFirst FigureFirst TableFirst Equation and Ref...

File outline
(auto-generated)

Code EditorVisual Editor

```
1 \documentclass{article}
2 \usepackage{graphicx} % Required for
  inserting images
3 \usepackage{amsmath} % standard
  package for math
4 %\usepackage{natbib}
5
6 \title{\LaTeX{} course demo}
7 \author{Yutong Shan, Andri Spilker}
8 \date{May 2025}
9
10 \begin{document}
11
12 \maketitle
13
14 \section{Introduction}\label{s:intro}
15
16 Let's make our first \LaTeX{} document
  together!
17
18 \subsection{First
  Figure}\label{ss:fig1}
19
20 We can insert our first figure below:
21
```

Recompile

1 / 275%

LaTeX course demo

Yutong Shan, Andri Spilker

May 2025

1 Introduction

Let's make our first LaTeX document together!

1.1 First Figure

We can insert our first figure below:



Figure 1: Here is a caption for the Overleaf logo.

1.2 First Table

Our first table goes here:

column 1	column 2	column 3
cell1	cell2	cell3
cell4	cell5	cell6

Table 1: Here is a caption for this table.

1.3 First Equation and Reference

LaTeX is very good at typesetting math, for example:

$$\Delta x \Delta p \geq \frac{h}{4\pi} \tag{1}$$

Equation 1 is also known as the Uncertainty Principle [Heisenberg, 1927].

Notice LaTeX's natural ability to make internal references to equations and handle bibliographical references!

Overleaf toolbar with shortcuts

hallo

Review Share Submit Hist

Code Editor Visual Editor

Normal text

B I

Insert picture and table

Ask TeXGPT

Generate equation (from text or image)

Widgets

- Title Generator
- Abstract Generator

Context Options

- Paraphrase
- Change style
- Split/Join
- Summarize
- Explain

Generate equation

Enter your own prompt/Paste an image here: Or, drop an image of the equation here:

schrödingers equation

Copy

```
% Requires: \usepackage{amsmath}
\begin{equation}
i\hbar \frac{\partial}{\partial t} \Psi(\mathbf{r}, t) = \hat{H} \Psi(\mathbf{r}, t)
\label{eq:schrodinger}
\end{equation}
```

Press  to Insert Generate

Help, my file doesn't compile!

Check the log for common errors and their location (line number):

- All open brackets and environments are closed
- No environment is left empty
- All commands are defined
- All references are defined
- All needed files are uploaded

For more complex issues, ask AI/GPT, TeX Stack Exchange, ...



The screenshot shows a LaTeX compilation interface. At the top, there is a navigation bar with buttons: 'A', 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. A red arrow points to the 'Share' button. Below the navigation bar, there is a 'Recompile' button with a dropdown arrow and a download icon. The main content area displays a 'No PDF' error message. A yellow box highlights the text 'Location of error in code' with a yellow arrow pointing to the error message. The error message is: 'LaTeX Error: \begin{figure} on input line 71 ended by \end{document}.' The file path is shown as './main.tex, 78'. Below the error message, there is a button 'Suggest fix' and a text box with instructions: 'See the LaTeX manual or LaTeX Companion for explanation. Type H <return> for immediate help. ... 1.78 \end{document} Your command was ignored. Type I <command> <return> to replace it with another command, or <return> to continue without it.' A 'Collapse' button is at the bottom right.

Compilation log

Review Share Submit History Layout Chat

Recompile

No PDF

This compile didn't produce a PDF. This can happen if:

- There is an unrecoverable LaTeX error. If there are LaTeX errors shown below or in the raw logs, please try to fix them and compile again.
- The document environment is not closed. Please add some content and compile again.
- This project contains a file called output .pdf. If that file exists, please rename it and compile again.

Location of error in code

LaTeX Error: \begin{figure} on input line 71 ended by \end{document}.

./main.tex, 78

You have 1 free suggestion left

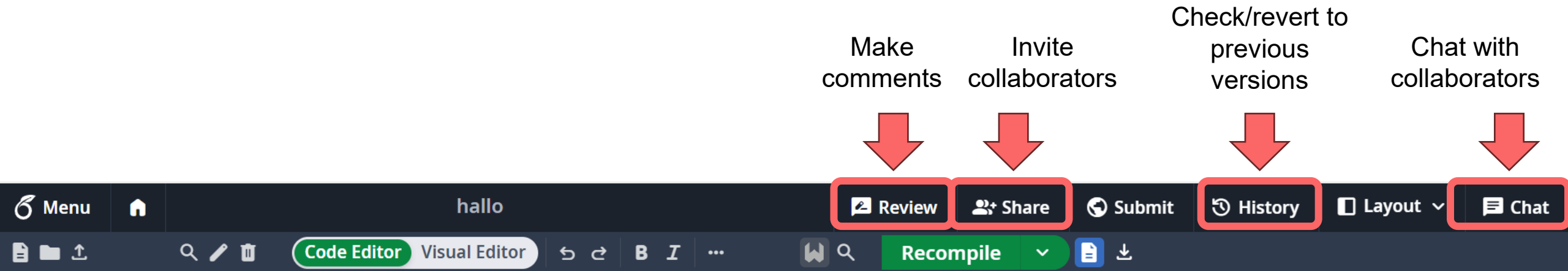
Suggest fix

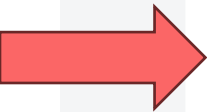
See the LaTeX manual or LaTeX Companion for explanation.
Type H <return> for immediate help.
...
1.78 \end{document}

Your command was ignored.
Type I <command> <return> to replace it with another command,
or <return> to continue without it.

Collapse

Overleaf is great for collaborating and version control





Documentation Home

Learn LaTeX in 30 minutes

Overleaf guides

Creating a document in Overleaf

Uploading a project

Copying a project

Creating a project from a template

Using the Overleaf project menu

Including images in Overleaf

Exporting your work from Overleaf

Working offline in Overleaf

Using Track Changes in Overleaf

Using bibliographies in Overleaf

Sharing your work with others

Using the History feature

Debugging Compilation timeout errors

How-to guides

Guide to Overleaf's premium features

LaTeX Basics

🔍 Search help library...

Documentation

Welcome to the Overleaf knowledge base. A complete list of topics is provided on the left hand-side, but here is a selection of useful articles:

New to LaTeX?

Start with our *Learn LaTeX in 30 minutes* guide.

For more specific introductions, have a look at:

- Create your first document in LaTeX
- Paragraphs and new lines
- Bold, italics and underlining
- Lists
- Mathematics
- Bibliographies and references
- Images
- Tables

LaTeX

LaTeX er et format og program for ulike typer dokumentproduksjon, som artikler, bøker, brev og lignende. Det kan kanskje være noe krevende å sette seg inn i, men etter litt øving har du et veldig kraftig verktøy som forholdsvis enkelt lager meget pene dokumenter. På en fornuftig måte får du plassert ligninger, tabeller, grafer og kildekode. LaTeX egner seg dermed fint til innleveringer av obliger, og ikke minst til masteroppgaver.

Innhold

- Komme igang
- Litt videre
- Referanseliste (BibTeX)
- UiOforside
- Vanlige problemer
- Mal for LaTeX-fil

Beginner's guide (by Dag Langmyhr)
<https://www.mn.uio.no/ifi/tjenester/it/hjelp/latex/latex-for-nybegynnere.pdf>

Your Oblig requirements (due 19 Feb 2026)

The assignment must be 2-3 pages written in LaTeX, based on the UiO template for Bachelor's theses and contain the following:

- ☐ Title
- ☐ Abstract
- ☐ Introduction
- ☐ Chosen topic or result presented in a numbered environment
- ☐ Mathematical notation
- ☐ A picture, illustration, figure, graph or table with caption
- ☐ Clickable cross references
- ☐ Clickable citations and references in text in a chosen style
- ☐ Bibliography in a chosen style
- ☐ A very short plan for the project

UNIVERSITY
OF OSLO

- 
- UNIVERSITY
OF OSLO

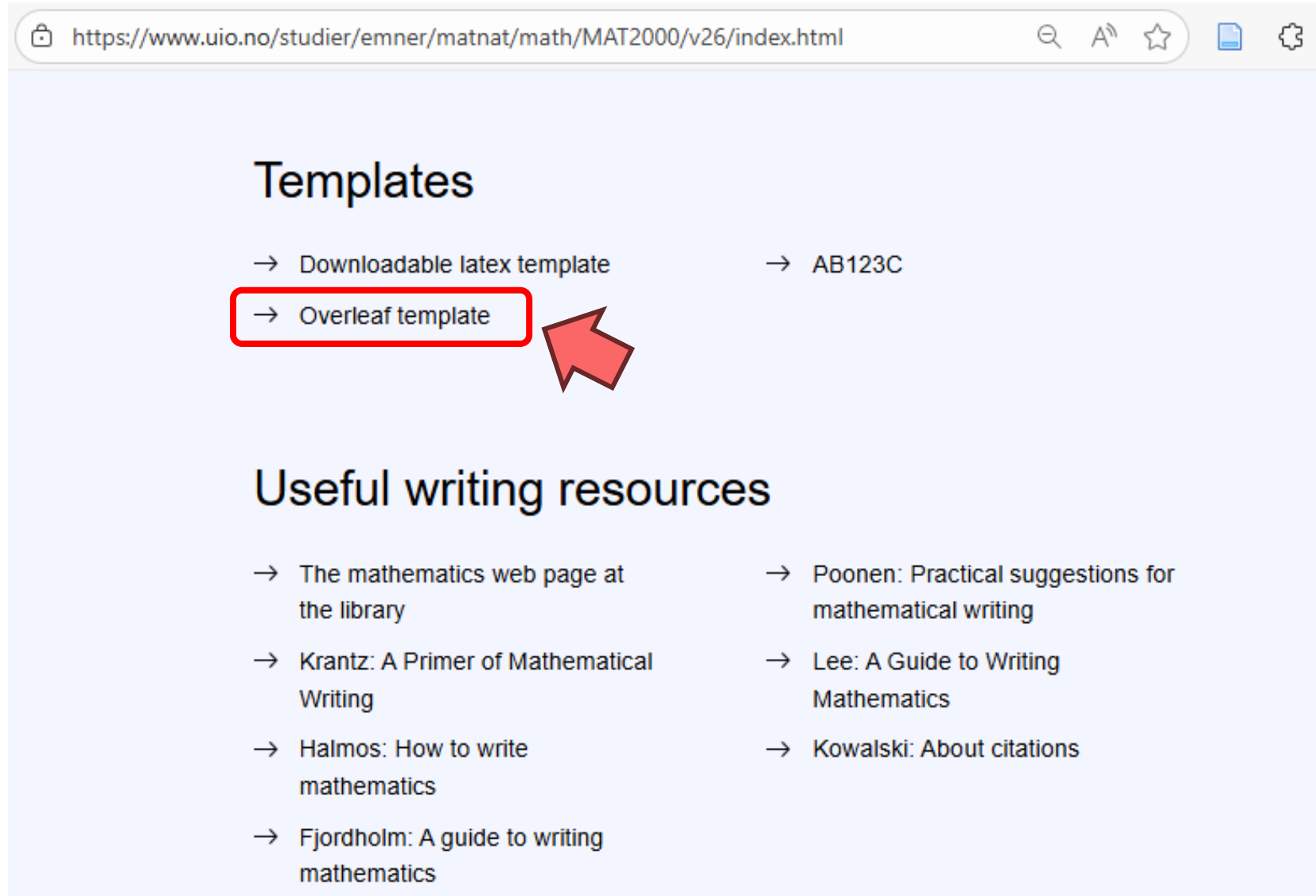


UNIVERSITY
OF OSLO

UiO Poster template

UiO Poster template

Find thesis template on MAT2000 course website



Make an editable copy (and rename)

2026 UiO Bachelor thesis template

File Edit View Help

Code Editor Visual

2026-uo-bachelor-s-thesis-(

1 %% Version
Dag Langmy
content by
based on c
Martin Helsø.

2

3 \documentclass[UKenglish]
{uiobachelorthesis} %% ...
add option 'final' to remove
margin notes

4 \usepackage[utf8]{inputenc}

5 \usepackage[T1]{fontenc,
url} \urlstyle{sf}

6 \usepackage{babel, textcomp,
uiomasterfpbc, uiotools}

7

Download as PDF

Download as source (.zip)

Make a copy

Rename

Recompile

49%

2 Background 3
2.1 Notation 3
2.2 Mathematics in L^AT_EX 4
3 Results 5
3.1 Theorems and other environments 5
3.2 Figures and tables 6
4 Conclusion 7

Abstract

The L^AT_EX document class **uiobachelorthesis** was created to facilitate the writing of your thesis according to the graphical guidelines of the University of Oslo. The extended template is adapted to the project courses MAT2000, STK-MAT2011 and MEK3200 at the Department of Mathematics.

The abstract is a short summary of your content, say 100-150 words, perhaps even less in the mandatory assignment. Readers use the abstract to decide whether this is worth to read or not. This is why you should use these words cleverly: put the topic and your results in context quickly, lay claim to new results, with a short description of methods used, followed by conclusions. Avoid special characters and do not cite in the abstract.

1 Introduction

The purpose of your introduction is to zoom in on your problem. Describe the history of the problem, mention how the problem has been studied by others, and motivate the reader for why your research and point of attack is worth it.

The introduction is where you set the 'feet' of the thesis. The style should be formal, so please avoid contractions like 'don't' in formal writing. The introduction should be written at least twice; before you start your project - and the last thing you write before you hand it in. A useful trick is to use the 'And-But-Therefore'-exercise when you write.

It is OK to postpone some notation to later sections, but you might want to reveal some of your results in the introduction as a teaser, and then you need most of the notation to be able to state that result in a proper way.

1.1 Structure

Your text should be subdivided into sections, subsections, paragraphs and sentences to make it easier to read. Sections and subsections should be numbered. Paragraphs are separated from one another by indented first line (differs in different languages).

A paragraph is build up by a claim, an argument or explanation, and finally a conclusion. Use complete, but short sentences. Break up sentences into smaller units. Note that mathematics (and citations) is usually presented as part of a sentence.

File outline

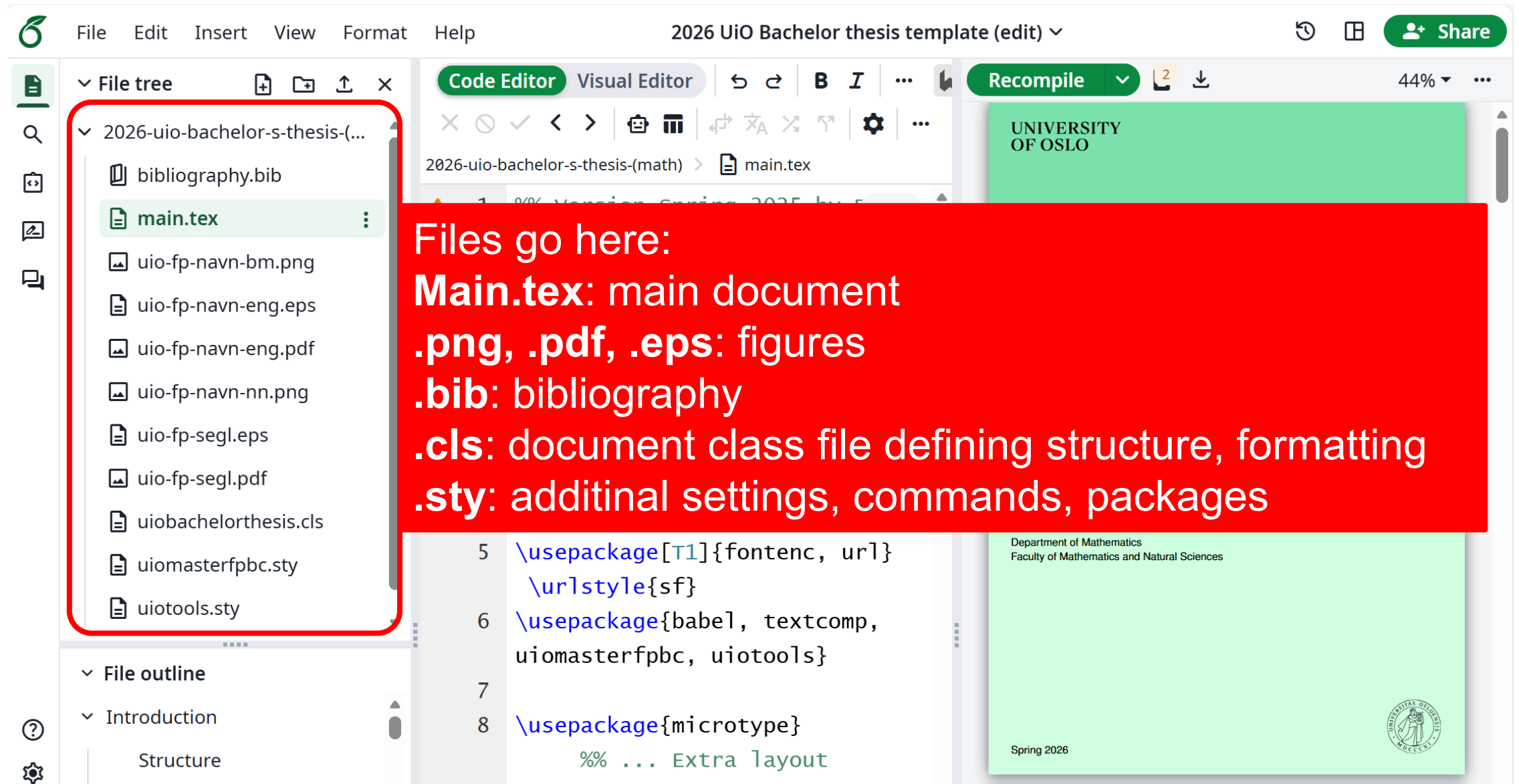
<https://www.overleaf.com/project>

Familiarize yourself with this template

The screenshot displays the '2026 UiO Bachelor thesis template' in a LaTeX editor. The interface is divided into three main sections:

- File tree (left):** Lists files for the project '2026-uio-bachelor-s-thesis-(...)'. The files include `bibliography.bib`, `main.tex` (selected), and several image and PDF files (`uio-fp-navn-bm.png`, `uio-fp-navn-eng.eps`, `uio-fp-navn-eng.pdf`, `uio-fp-navn-nn.png`, `uio-fp-segl.eps`, `uio-fp-segl.pdf`). It also lists style files `uiobachelorthesis.cls`, `uimasterfpbc.sty`, and `uiotools.sty`.
- Code Editor (center):** Shows the LaTeX source code for `main.tex`. The code includes comments about the version (Spring 2025 by r Langmyhr) and the template's origin (Karoline Moe based on old template by Martin Helsø). It defines documentclass options, loads packages like `inputenc`, `fontenc`, `url`, `babel`, `textcomp`, `uimasterfpbc`, `uiotools`, and `microtype`.
- Preview (right):** Shows a preview of the thesis template. The header is 'UNIVERSITY OF OSLO'. Below it is a black box with 'Bachelor's thesis' in white. The main title is 'UiO Bachelor's thesis' with the subtitle 'An extended template'. The author is 'Karoline Moe', and the course is 'MAT2000 – Project work in Mathematics' (10 ECTS study points). The supervisor is 'Kris Shaw' from the 'Department of Mathematics' and 'Faculty of Mathematics and Natural Sciences'. The footer shows 'Spring 2026' and the University of Oslo logo.

File system

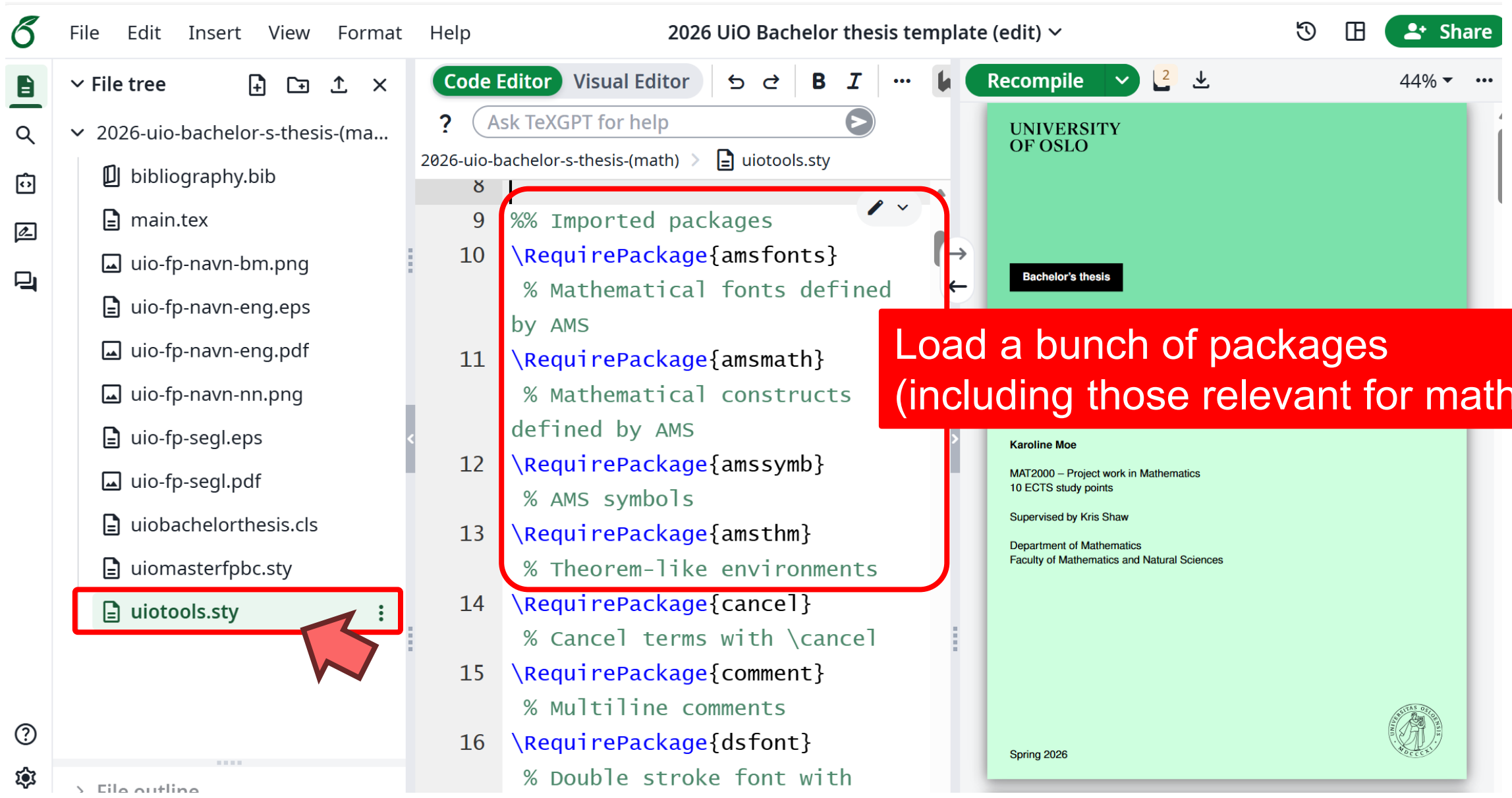


The screenshot shows a LaTeX editor interface with a menu bar (File, Edit, Insert, View, Format, Help) and a title bar (2026 UiO Bachelor thesis template (edit)). The left sidebar contains a 'File tree' panel with a list of files: bibliography.bib, main.tex (highlighted), uio-fp-navn-bm.png, uio-fp-navn-eng.eps, uio-fp-navn-eng.pdf, uio-fp-navn-nn.png, uio-fp-segl.eps, uio-fp-segl.pdf, uiobachelorthesis.cls, uiomasterfpbc.sty, and uiotools.sty. A red box highlights the 'File tree' panel. The main area is divided into a 'Code Editor' and a 'Visual Editor'. The 'Code Editor' shows the LaTeX source code for main.tex, including package declarations and a comment for extra layout. The 'Visual Editor' shows a preview of the document, which is a green page with the University of Oslo logo and text.

Files go here:

- Main.tex**: main document
- .png, .pdf, .eps**: figures
- .bib**: bibliography
- .cls**: document class file defining structure, formatting
- .sty**: additional settings, commands, packages

Packages for extra math support



The screenshot shows a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview on the right. The file tree lists several files, with `uiotools.sty` highlighted. The code editor shows the contents of `uiotools.sty`, which includes several `\RequirePackage` commands for loading mathematical packages. A red box highlights these commands, and a red arrow points to the `uiotools.sty` file in the file tree. The preview on the right shows a thesis template for the University of Oslo, with the title "Bachelor's thesis" and the author "Karoline Moe".

File Edit Insert View Format Help 2026 UiO Bachelor thesis template (edit) Share

File tree

- 2026-uio-bachelor-s-thesis-(ma...
 - bibliography.bib
 - main.tex
 - uio-fp-navn-bm.png
 - uio-fp-navn-eng.eps
 - uio-fp-navn-eng.pdf
 - uio-fp-navn-nn.png
 - uio-fp-segl.eps
 - uio-fp-segl.pdf
 - uiobachelorthesis.cls
 - uiomasterfpbc.sty
 - uiotools.sty**

Code Editor Visual Editor

Ask TeXGPT for help

2026-uio-bachelor-s-thesis-(math) > uiotools.sty

```
8
9 %% Imported packages
10 \RequirePackage{amsfonts}
   % Mathematical fonts defined
   by AMS
11 \RequirePackage{amsmath}
   % Mathematical constructs
   defined by AMS
12 \RequirePackage{amssymb}
   % AMS symbols
13 \RequirePackage{amsthm}
   % Theorem-like environments
14 \RequirePackage{cancel}
   % cancel terms with \cancel
15 \RequirePackage{comment}
   % Multiline comments
16 \RequirePackage{dsfont}
   % Double stroke font with
```

Recompile 44%

UNIVERSITY OF OSLO

Bachelor's thesis

Karoline Moe

MAT2000 – Project work in Mathematics
10 ECTS study points

Supervised by Kris Shaw

Department of Mathematics
Faculty of Mathematics and Natural Sciences

Spring 2026

Load a bunch of packages (including those relevant for math)

Bibliography file

The screenshot displays a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview window on the right. The file tree shows a project named '2026-uio-bachelor-s-thesis-(ma...)' containing files like 'main.tex', 'uio-fp-navn-bm.png', 'uio-fp-navn-eng.eps', 'uio-fp-navn-eng.pdf', 'uio-fp-navn-nn.png', 'uio-fp-segl.eps', 'uio-fp-segl.pdf', 'uiobachelorthesis.cls', 'uio-masterfpbc.sty', and 'uiotools.sty'. The 'bibliography.bib' file is highlighted with a red box and a red arrow. The code editor shows the content of 'bibliography.bib' with line numbers 83 to 93. A red box highlights the BibTeX entries for '@book' and '@article'. The preview window shows a green document cover for the 'UNIVERSITY OF OSLO' with a 'Bachelor's thesis' label and a 'Spring 2026' date.

File Edit View Help 2026 UiO Bachelor thesis template (edit) ▾

File tree

- 2026-uio-bachelor-s-thesis-(ma...
 - bibliography.bib**
 - main.tex
 - uio-fp-navn-bm.png
 - uio-fp-navn-eng.eps
 - uio-fp-navn-eng.pdf
 - uio-fp-navn-nn.png
 - uio-fp-segl.eps
 - uio-fp-segl.pdf
 - uiobachelorthesis.cls
 - uio-masterfpbc.sty
 - uiotools.sty

Code Editor Visual Editor

Ask TeXGPT for help

2026-uio-bachelor-s-thesis-(math) > bibliography.bib

```
83 @book{Vie46,  
84   title={Opera Mathematica},  
85   author={Vi{\`e}te,  
86     Fran{\c{c}}ois},  
87   year={1546},  
88   publisher={Lvgdvni  
89     Batavorvm, ex officinâ  
90     Bonaventuræ \& Abrahami  
91     Elzeviriorum}  
92 }  
93 @article {wil93,  
94   AUTHOR = {Wiles, Andrew},  
95   TITLE = {Modular elliptic  
96     curves and {F}ermat's  
97     last theorem},  
98   JOURNAL = {Ann. of Math.  
99     (2)}
```

Recompile ▾ 2 44% ▾

UNIVERSITY OF OSLO

Bachelor's thesis

MAT2000 – Project work in Mathematics
10 ECTS study points

Supervised by Kris Shaw

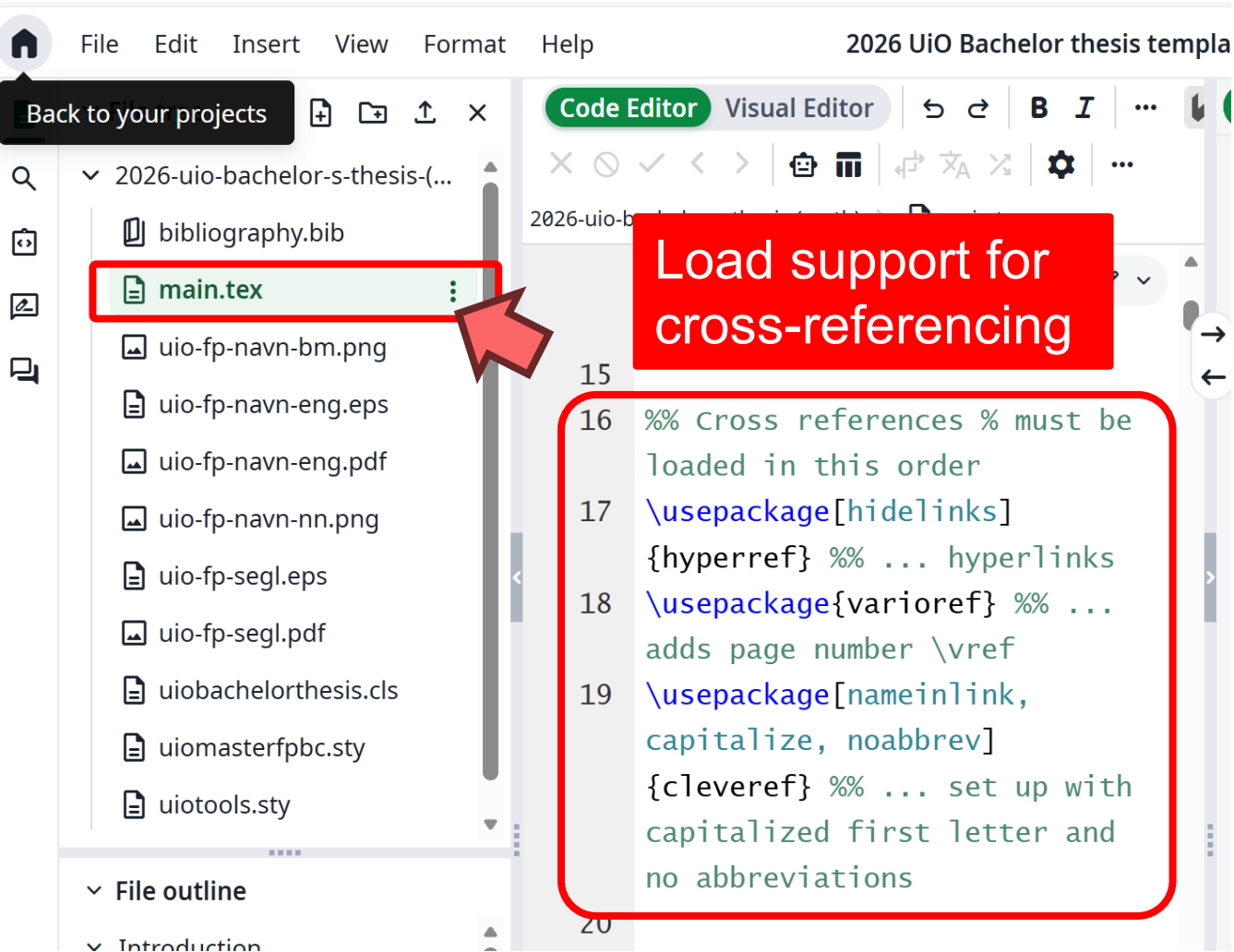
Department of Mathematics
Faculty of Mathematics and Natural Sciences

Spring 2026

File outline

List of bibliographical references with metadata

Preamble settings



Load support for cross-referencing

```
23 %% Reference management
24 \usepackage[backend=biber,
25   sortcites = true, %% ...
26   sorts multiple citations
27   giveninits = true, %% ...
28   truncates all given names
29   to initials
30   doi = true, %% ...
31   prints DOI in reference
32   list - useful for digital
33   navigation
34   isbn = false, %% ...
35   prints ISBN in reference
36   list
37   url = false, %% ...
38   prints URL - sometimes
39   useful for digital
40   navigation, overridden by
41   online-item
42   % sortlocale = nb_NO, %%
43   ... Norwegian letters,
44   known bug in biblat
45   be resolved
46   % maxcitenames=3,
47   % mincitenames=1,
48   maxbibnames=5,
49   % minbibnames=1,
50   % sorting = none, %% ...
51   will sort references in
52   order of appearance
53   citestyle=authoryear,
54   style=authoryear]
55 {biblatex}
```

```
41 \addbibresource{bibliography.bib}
    %% ... name of your
    bibliography-file
```

Define bibliography file

Define BibLaTeX settings (for display of citations & bibliography)

Metadata: Title, author, supervisor

The image shows a LaTeX editor interface for a "2026 UiO Bachelor thesis template". The interface includes a menu bar (File, Edit, Insert, View, Format, Help), a toolbar with icons for undo, redo, bold, italic, and other formatting options, and a sidebar with a file tree and file outline. The main editor window displays the LaTeX source code for a document named "main.tex".

Annotations in red boxes highlight specific metadata fields in the LaTeX code:

- Title, subtitle, author name:** This annotation points to lines 44, 45, and 46 of the code, which define the title, subtitle, and author.
- Supervisor name:** This annotation points to line 51 of the code, which defines the supervisor.

The rendered preview on the right shows the resulting thesis cover page, which includes the University of Oslo logo, the title "UiO Bachelor's thesis", the subtitle "An extended template", the author "Karoline Moe", the program "MAT2000 – Project work in Mathematics", the supervisor "Supervised by Kris Shaw", and the department "Department of Mathematics, Faculty of Mathematics and Natural Sciences".

```
43
44 \title{UiO Bachelor's thesis}
45 \subtitle{An extended template}
46 \author{Karoline Moe}
47
48 \begin{document}
49 \uiomasterfp[dept={Department
of Mathematics}, %% ... or
your department
50 program={MAT2000 -- Project
work in Mathematics}, %%
... or your course
51 supervisor={Kris Shaw},
%% ... or blank
52 % or supervisors={A Name\and
B Name}, %% if more than
one
```

Front page colour, table of contents, abstract

The screenshot shows a LaTeX editor interface for a 2026 UiO Bachelor thesis template. The editor is in 'Code Editor' mode, showing the `main.tex` file. The left sidebar shows the file explorer with various files including `bibliography.bib`, `main.tex`, `ui0-fp-navn-bm.png`, `ui0-fp-navn-eng.eps`, `ui0-fp-segl.eps`, `uiobachelorthesis.cls`, `uiomasterfpbc.sty`, and `uiotools.sty`. The bottom left shows the 'File outline' with 'Introduction' and 'Structure'.

Annotations and corresponding code:

- Set front page colour (green, blue, orange)**: Points to line 55, `color=green]`.
- Display table of contents**: Points to line 57, `\tableofcontents`.
- Abstract**: Points to line 59, `\begin{abstract}`.

The rendered preview on the right shows the following structure:

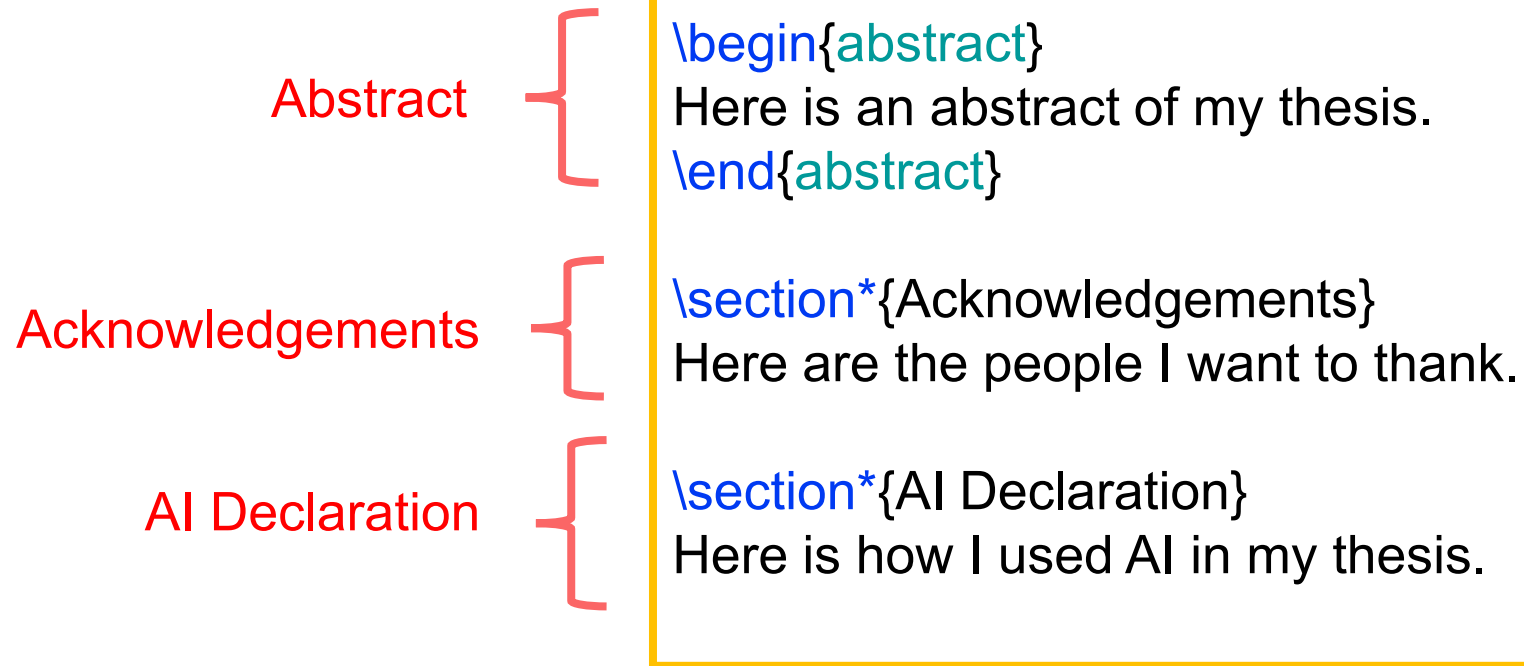
- Contents**: A table of contents listing sections 1 through 4 with their respective page numbers.
- Abstract**: A section titled 'Abstract' containing a paragraph of text.
- Introduction**: A section titled 'Introduction' containing a paragraph of text.

The code in the editor is as follows:

```
54 master template
54 long=10,
54 %% ... or
54 short or other ECTS value
55 color=green]
55 %%... color
56 options
57 \tableofcontents
58
59 \begin{abstract}
60 The \LaTeX{} document class
60 \textbf{\textsf{uiobachelorthe
60 sis}} was
61 created to facilitate the
61 writing of your thesis
61 according to the
```

Add more stuff to the front matter as needed

(**Front matter:** introductory information that comes before the thesis content)



Sections, labels for internal referencing

Back to your projects

2026-uo-bachelor-s-thesi...

bibliography.bib

main.tex

File outline

Introduction

Structure

Draft and final

Citations

Declaration of gen...

2026-uo-bachelor-s-thesis-(math) > main.tex

65

`\end{abstract}`

66

67

`\section{Introduction}\label{sec:intro} %% ...`

remember to adapt the headlines to your content

68

The purpose of your introduction is to zoom in on your problem. Describe the history of the problem, mention how the problem has been studied by others, and motivate the reader for why your research and point of attack is worth it.

69

70

The introduction is where you set the `\enquote{feel}` of the thesis. The style should be formal, so please avoid contractions like `\enquote{don't}` in formal writing. The introduction should be written at least twice; before you start your project - and the last thing you write before you hand it in. A useful trick is to use the `\enquote{And-But-Therefore}`-exercise when you write.

71

72

It is OK to postpone some notation to later sections, but you might want to reveal some of your results in the introduction as a teaser.

2026 UiO Bachelor thesis template

Recompile

2 / 9

76%

1.4 Declaration of generative AI 3

2 Background 3

2.1 Notation 3

2.2 Mathematics in L^AT_EX 4

3 Results 5

3.1 Theorems and other environments 5

3.2 Figures and tables 6

4 Conclusion 7

Abstract

The L^AT_EX document class `uiobachelorthesis` was created to facilitate the writing of your thesis according to the graphical guidelines of the University of Oslo. The extended template is adapted to the project courses MAT2000, STK-MAT2011 and MEK3200 at the Department of Mathematics.

The abstract is a short summary of your content, say 100–150 words, perhaps even less in the mandatory assignment. Readers use the abstract to decide whether this is worth to read or not. This is why you should use these words cleverly: put the topic and your results in context quickly, lay claim to new results, with a short description of methods used, followed by conclusions. Avoid special characters and do not cite in the abstract.

1 Introduction

The purpose of your introduction is to zoom in on your problem. Describe the history of the problem, mention how the problem has been studied by others, and motivate the reader for why your research and point of attack is worth it.

The introduction is where you set the ‘feel’ of the thesis. The style should be formal, so please avoid contractions like ‘don’t’ in formal writing. The introduction should be written at least twice; before you start your project - and the last thing you write before you hand it in. A useful trick is to use the ‘And-But-Therefore’-exercise when you write.

It is OK to postpone some notation to later sections, but you might want to reveal some of your results in the introduction as a teaser, and then you need most of the notation to be able to state that result in a proper way.

1.1 Structure

Your text should be subdivided into sections, subsections, paragraphs and sentences to make it easier to read. Sections and subsections should be numbered. Paragraphs are separated from one another by indented first line (differs in different languages).

A paragraph is build up by a claim, an argument or explanation, and finally a conclusion. Use complete, but short sentences. Break up sentences into smaller units. Note that mathematics (and citations) is usually presented as part of a sentence.

Give a label to the section for internal referencing

Section: Introduction

sec:intro

Subsections, theorem-like environments

The screenshot shows a LaTeX editor interface for a "2026 UiO Bachelor thesis template". The left sidebar contains a "File tree" and a "File outline". The "File tree" lists files like `bibliography.bib`, `main.tex`, and various image files. The "File outline" shows a hierarchy: "File outline" > "Introduction" > "Structure". The "Structure" file is highlighted. The main editor shows the LaTeX source code for the "Structure" file. A red box highlights the `\subsection{Structure}` command and the following text: "Your text should be subdivided into sections, subsections, paragraphs and sentences to make it easier to read. Sections and subsections should be numbered. Paragraphs are separated from one another by indented first line (differs in different languages)." A red arrow points from this box to the "Structure" entry in the "File outline". A yellow box highlights the `\begin{remark}` and `\end{remark}` commands and the text: "Important remarks can be put in separate remark-environments." A yellow arrow points from this box to a "Remark 1.1" environment in the rendered output on the right. The rendered output shows the "1 Introduction" section, followed by "1.1 Structure". The "Remark 1.1" environment is shown as a callout box with the text: "Remark 1.1. Important remarks can be put in separate remark-environments. Always remember that your goal is to make the reader understand. This means that your task as the author is to minimize what the reader must keep in mind at one time. Writing that frees up memory in the reader's brain is a blessing. It helps the reader to get an outline of the project in the introduction. Use clickable cross references for smarter reading, see [Section 3](#), and you may even add page numbers to the cross reference Section 3 on page 5."

Subsection: structural element nested under section

```
74 \subsection{Structure}
75 Your text should be subdivided into sections,
    subsections, paragraphs and sentences to make it
    easier to read. Sections and subsections should
    be numbered. Paragraphs are separated from one
    another by indented first line (differs in
    different languages).
76
77 A paragraph is build up by a claim, an argument
    or explanation, and finally a conclusion. Use
    complete, but short sentences. Break up
    sentences into smaller units. Note that
    mathematics (and citations) is usually presented
    as part of a sentence.
78
79 \begin{remark}
80 Important remarks can be put in separate remark-
    environments.
81 \end{remark}
82
83 Always remember that your goal is to make the
    reader understand. This means that your task as
    the author is to minimize what the reader must
    keep in mind at one time. Writing that frees up
```

1 Introduction

The purpose of your introduction is to zoom in on your problem. Describe the history of the problem, mention how the problem has been studied by others, and motivate the reader for why your research and point of attack is worth it.

The introduction is where you set the 'feel' of the thesis. The style should be formal, so please avoid contractions like 'don't' in formal writing. The introduction should be written at least twice; before you start your project - and the last thing you write before you hand it in. A useful trick is to use the 'And-But-Therefore'-exercise when you write.

It is OK to postpone some notation to later sections, but you might want to reveal some of your results in the introduction as a teaser, and then you need most of the notation to be able to state that result in a proper way.

1.1 Structure

Your text should be subdivided into sections, subsections, paragraphs and sentences to make it easier to read. Sections and subsections should be numbered. Paragraphs are separated from one another by indented first line (differs in different languages).

A paragraph is build up by a claim, an argument or explanation, and finally a conclusion. Use complete, but short sentences. Break up sentences into smaller units. Note that mathematics (and citations) is usually presented as part of a sentence.

Remark 1.1. Important remarks can be put in separate remark-environments.

Always remember that your goal is to make the reader understand. This means that your task as the author is to minimize what the reader must keep in mind at one time. Writing that frees up memory in the reader's brain is a blessing.

It helps the reader to get an outline of the project in the introduction. Use clickable cross references for smarter reading, see [Section 3](#), and you may even add page numbers to the cross reference Section 3 on page 5.

Theorem numbering

The screenshot shows a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview window on the right. The file tree lists several files, with `uiotools.sty` highlighted. The code editor shows the definition of theorem environments using `\declaretheorem`. The preview window shows the rendered output, including section headings and theorem statements.

Define style of theorem environments and how they are numbered

```
117 spacebel 6pt]
118 \declaretheorem[style = plain,
119 \declaretheorem[style = plain,
120 \declaretheorem[style = plain,
121 \declaretheorem[style = plain,
122 \declaretheorem[style = plain,
123 \declaretheorem[style = plain,
124 \declaretheorem[style =
```

1.1 Structure

Your text should be subdivided into make it easier to read. Sections and separated from one another by index

A paragraph is build up by a conclusion. Use complete, but short Note that ~~mathematics~~ (and citation

Theorem 1.1. *The first theorem.*

Corollary 1.2. *The first corollary.*

Lemma 1.3. *The first lemma.*

Remark 1.4. Important remarks can

Proof. Important theorems can be r

Always rem your task as the Writing that frees up memory in the

It helps the reader to get an outl cross references for smarter reading,

All use a common theorem counter

Customize theorem numbering

The image shows a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview on the right. The file tree lists files like `bibliography.bib`, `main.tex`, and `uiotools.sty`, with a red box highlighting `uiotools.sty`. The code editor shows LaTeX commands for defining theorem environments, with a red box around lines 118-124 and a yellow box around line 119. The preview shows the resulting document structure with sections like "1.1 Structure" and "Theorem 1.1", with a yellow box around "Corollary 1.1" and a red box around "Lemma 1.2" and "Remark 1.3".

Define style of theorem environments and how they are numbered

```
117 spacebel  
6pt]  
{definition}  
118 \declaretheorem[style = plain,  
numberwithin = section]{theorem}  
119 \declaretheorem[style = plain,  
numberwithin = section]{corollary}  
120 \declaretheorem[style = plain,  
sibling = theorem]{lemma}  
121 \declaretheorem[style = plain,  
sibling = theorem]{proposition}  
122 \declaretheorem[style = plain,  
sibling = theorem]{observation}  
123 \declaretheorem[style = plain,  
sibling = theorem]{conjecture}  
124 \declaretheorem[style =  
definition, sibling = theorem]  
{definition}
```

1.1 Structure

Your text should be subdivided into
make it easi
separated fr
A parag
conclusion.

Note that mathematics (and citation

Theorem 1.1. *The first theorem.*

Corollary 1.1. *The first corollary.*

Lemma 1.2. *The first lemma.*

Remark 1.3. Important remarks car

Proof. Important theorems can be p

Always remember that your goal
your task as the author is to minimi
Writing that frees up memory in the
It helps the reader to get an outl
cross references for smarter reading,

Making internal cross-references

Show internal references

2026 UiO Bachelor thesis template

File Edit View Help

Code Editor Visual Editor

2026-uio-bachelor-s-thesis-math > main.tex > Results > Theorems and other environments

```
189 \[
190 F = G \left( \frac{m_1 m_2}{r^2} \right) = G \left( \frac{m_1 m_2}{r^2} \right).
191 \]
192 Ask your supervisor and look at canonical text books and articles from your field.
193
194
195 \section{Results}\label{sec:results} %% ...
    remember to adapt the headlines to your content
196 \subsection{Theorems and other environments}
197 This is the section where you state and prove
    your main results in a rigorous way. Make a
    cross reference to another section if necessary,
    for instance \cref{sec:intro}, or use the
    fancier version that additionally prints the
    page number \vref{sec:intro}. The environments
    are supposed to be referred to with capitalized
    first letter.
198
199 A mathematical text needs transitional words,
    sentences or paragraphs. Therefore, we often
```

Recompile 6 / 9 76%

$$L' = L \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

Multiplication of variables is usually written without a visible dot, and ab means $a \cdot b$, while multiplication of numbers requires this dot: $2 \cdot 3$.

The use of parenthesis is a science in itself, with rules for nesting: $\{[(())]\}$ is the conventional ordering. Adjusting height to the height of the content inside the parenthesis is crucial for a professional look. Compare

$$F = G \left(\frac{m_1 m_2}{r^2} \right) = G \left(\frac{m_1 m_2}{r^2} \right).$$

Ask your supervisor and look at canonical text books and articles from your field.

3 Results

3.1 Theorems and other environments

This is the section where you state and prove your main results in a rigorous way. Make a cross reference to another section if necessary, for instance Section 1, or use the fancier version that additionally prints the page number Section 1 on page 11. The environments are supposed to be referred to with capitalized first letter.

A mathematical text needs transitional words, sentences or paragraphs. Therefore, we often write an introductory text before we state a theorem and between a theorem and a proof. Say why you need to state the theorem and where it is from.

We state Pythagoras' theorem in our notation in the form presented in [5].

Theorem 3.1 (Pythagoras' theorem, [3, Theorem 1]). *In a right-angled triangle where the lengths of the sides are a , b and c respectively, with $a \leq b < c$, we have that*

$$a^2 + b^2 = c^2. \quad (3)$$

In other words, Theorem 3.1 says that the square on the side opposite the right angle equals the sum of the squares on the sides containing the right angle. There are many proofs of this result, see [3] or preferably cite another source.

Notice that we define the variables before they are needed. Sometimes it is inevitable to declare the variables after they have been used, but try to avoid it.

We now give a proof of Theorem 3.1 where we adapt the geometric proof by Euklid given in [3, p. 35].

Proof. Describe the type of proof; e.g., direct, contrapositive, by contradiction, algebraic, geometric. Give a short sketch of the proof to clarify steps. Use transitional words like first, second and finally. Indicate where you use the hypotheses in the theorem.

If you are told to include a proof from a text book or article by your supervisor, make sure you make it your own: Rewrite the structure, add detail and rewrite it in your own words. This is a famous plagiarism trap in mathematical texts.

Little summary of useful commands so far

Document structural elements

```
\section{section_name}  
\subsection{subsection_name}  
\subsubsection{subsubsection_name}  
\section*{section_name} → unnumbered
```

Theorem-like environments

```
\begin{theorem}  
  Theorem text  
\end{theorem}
```

Available environments: theorem, corollary, lemma, proposition, observation, conjecture, definition, example, notation, remark, proof

Internal cross-references

`\ref{label}` → show number only

`\cref{label}` → adds type (e.g., section, figure, equation, theorem, ...)

`\vref{label}` → adds page number

Note: 'hyperref' package (loaded in the preamble) makes everything clickable

Example math

Input math symbols and equations

```
Code Editor Visual Editor
2026-uio-bachelor-s-thesis-(math) > main.tex > Background > Notation

add chapters over the sections, the environment
will have two decimals (2.1.1).

143
144 \subsection{Mathematics in \LaTeX{}}
145 Please note that mathematics should be thought of,
read as and written as part of a sentence. It
could be inline like  $x=2 \in \mathbb{C}$  or displayed
on a separate line in an equation environment or
with display style in math mode.
146
147 For instance we have with equation a nice equation
number
148 \begin{equation}
149 \iint_D \mathrm{d}x \mathrm{d}y
150 =
151 \int_0^{2\pi} \int_0^t \rho \mathrm{d}\rho \mathrm{d}t
152 =
153 \frac{4}{3} \pi^3,
154 \label{eq:integration}
155 \end{equation}
156 but this could also be written without equation
number in display style as
157 \[\iint_D \mathrm{d}x \mathrm{d}y
158 =
```

To number the equations by section, add the command `\numberwithin{equation}{section}` to the start of the document

2.2 Mathematics in $\LaTeX$

Please note that mathematics should be thought of, read as and written as part of a sentence. It could be inline like $x = 2 \in \mathbb{C}$ or displayed on a separate line in an equation environment or with display style in math mode.

For instance we have with equation a nice equation number

$$\iint_D \mathrm{d}x \mathrm{d}y = \int_0^{2\pi} \int_0^t \rho \mathrm{d}\rho \mathrm{d}t = \frac{4}{3} \pi^3, \quad (1) \quad \text{eq:integrati}$$

but this could also be written without equation number in display style as

$$\iint_D \mathrm{d}x \mathrm{d}y = \int_0^{2\pi} \int_0^t \rho \mathrm{d}\rho \mathrm{d}t = \frac{4}{3} \pi^3.$$

The advantage of the first option is that you can cleverly refer to your equation with `\cref`: Equation (1). Turn off the equation number by adding a star if you don't refer to it later in your text.

A twist for equations that span multiple lines is using a third environment where the equal signs are aligned and each line can be given a separate number; a number which can be turned on and off for each line separately:

$$\begin{aligned} \iint_D \mathrm{d}x \mathrm{d}y &= \int_0^{2\pi} \int_0^t \rho \mathrm{d}\rho \mathrm{d}t \\ &= \frac{4}{3} \pi^3. \end{aligned} \quad (2) \quad \text{eq:integrati}$$

Letters in math mode will always be in math font, so you must specify text; $x = 2$ and $\mathrm{d}x = 3$ is different from $x = 2$ and $x = 3$. However, some mathematical objects have an upright font, for example $\sin x$ or $\ln x$, and notice the differential $\mathrm{d}x$ vs. dx . You may define such operators yourself in the preamble using `DeclareMathOperator`.

Remark 2.2. It is considered a cardinal sin to start a sentence with a mathematical symbol or end without proper punctuation, even when you display a formula, see Equation (2).

Example figure

File Edit View Help

2026 UiO Bachelor thesis template

Share

File tree

2026-uio-bachelor-s-thesi...

- bibliography.bib
- main.tex
- uio-fp-navn-bm.png
- uio-fp-navn-eng.eps
- uio-fp-navn-eng.pdf
- uio-fp-navn-nn.png
- uiofp-seg1.pdf
- uiobachelorthesis.cls
- uiomasterfpbc.sty
- uiotools.sty

File outline

- Results
 - Theorems and oth...
 - Figures and tables
- Conculsion
- Appendix: More infor...

Code Editor Visual Editor

2026-uio-bachelor-s-thesis-math > main.tex > Results > Figures and tables

```
the caption, otherwise the environment will be
referred to as Section. Although the caption of a
figure should explain it to the impatient reader
who only looks at your figures, the figure must be
linked to the body text and explained properly
there too.

252
253 \begin{figure}[htbp] %% order gives preferred
    placement
254     \centering
255     \includegraphics[width=5cm]{uio-fp-seg1}
256     \caption[The Apollon seal (to appear in LOF)]
        {The Apollon seal - and the caption in a
        slightly smaller font goes underneath the
        figure. This could be a complete description
        of the figure in several sentences. Notice the
        shorter version in the code, that is printed
        in the List of Figures - if applicable.}
257     \label{fig:apollon}
258 \end{figure}
259
260
261 \section{Conculsion}\label{sec:conc} %% ...
    remember to adapt the headlines to your content
262 In the conclusion you put your results in context
```

Recompile

7 / 9

76%

demotivating for a younger reader and annoying for a professor.

Notice the square that ends the proof. Like everything else, you can change this symbol by tweaking your $\LaTeX$ -code.

3.2 Figures and tables

In this section you can see examples of tables and figures. Table 1 lists Pythagorean triples; i.e., triples of integers that satisfy Equation (3) in Theorem 3.1 on the preceding page. It is made with the booktabs-package, which is the preferred package for making tables in $\LaTeX$.

Table 1: Examples of triples of integers that satisfy Equation (3). The caption has a slightly smaller font and is placed above the table.

<i>a</i>	<i>b</i>	<i>c</i>
3	4	5
65	72	97

All tables and figures are floats that $\LaTeX$ will place at a 'perfect' place in your document. Do not override this unless the float creates unnatural page breaks or moves to another section, hence it makes sense to worry about this only right before handing in your project.

All tables and figures must be referred to in the text with cross references Figure 1 or Figure 1 for added page number if necessary. Make sure the label comes right after the caption, otherwise the environment will be referred to as Section. Although the caption of a figure should explain it to the impatient reader who only looks at your figures, the figure must be linked to the body text and explained properly there too.

tab: tall



Figure 1: The Apollon seal - and the caption in a slightly smaller font goes underneath the figure. This could be a complete description of the figure in several sentences. Notice the shorter version in the code, that is printed in the List of Figures - if applicable.

Activity!

On your version of the '2026 UiO Bachelor thesis' template:

1. add your name
2. add a project title
3. add an equation
4. add an internal reference to the equation
5. add a remark



Your Oblig requirements (due 19 Feb 2026)

The assignment must be 2-3 pages written in LaTeX, based on the UiO template for Bachelor's theses and contain the following:

- ☐ Title
- ☐ Abstract
- ☐ Introduction
- ☐ Chosen topic or result presented in a numbered environment
- ☐ Mathematical notation
- ☐ A picture, illustration, figure, graph or table with caption
- ☐ Clickable cross references
- ☐ Clickable citations and references in text in a chosen style
- ☐ Bibliography in a chosen style
- ☐ A very short plan for the project

???

How to reference mathematical literature

- Citation **in the text** where you use or refer to the information. Common styles in mathematics (**bibLaTeX style name** in parenthesis):
 - **numbered** ('**numeric**': [1,2], [3], ...)
 - **alphanumeric abbreviations** ('**alphabetic**': [AM69, Gow01], ...)
 - **last name(s)-year** ('**authoryear**': Markwig et al. 2022, ...)
- (when appropriate) also specify which page/theorem/result
- All citations must appear in the **reference list**
- All citations and references must be written in a consistent style
- Check with your advisor

Making bibliographical references (i.e., citations)

The screenshot shows a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview window on the right. The file tree lists files like `bibliography.bib`, `main.tex`, and `uiomasterfbc.sty`. The code editor shows the `main.tex` file with the following content:

```
90 \subsection{Citations}
91 The introduction (See \vref{sec:intro}) will most
likely include some text that contains a claim
that you need to support with a citation. Cite at
the end of claims and sentences: a result that is
shown by Markwig et. al. in \parencite{MMS22b}.
Sometimes you want to follow the notation and
general background from a canonical textbooks \eg
\cite{MMS22a, MMS22b, AM69} and then you should
declare that with a citation in the beginning of a
paragraph or sentence. If you want to reuse a
fairly well known result from the same textbook,
indicate that with a specific citation with page
number, \cite[33]{AM69}, page numbers separated by
a double dash, \cite[33--34]{AM69}, or numbered
environment (number connected to the environment
with a tilde-symbol so it doesn't split over two
lines), \cite[Theorem~1]{AM69}, in the citation,
unless you want to emphasize that you cite the
entire work \cite{AM69}.
```

The preview window shows the rendered output of the code. It includes a section titled "1.2 Draft and final" and "1.3 Citations". The text in the preview window is as follows:

It helps the reader to get an outline of the project in the introduction. Use clickable cross references for smarter reading, see Section 3, and you may even add page numbers to the cross reference Section 3 on page 5.

1.2 Draft and final

As long as you work on your document, you want to show the labels of sections, environments etc. in the margins and citekeys of your citations between lines. To remove these, please add the option 'final' to the documentclass. It is still convenient to build labels according to the environment with a 'prefix:description', see examples in the template.

1.3 Citations

The introduction (See Section 1 on the previous page) will most likely include some text that contains a claim that you need to support with a citation. Cite at the end of claims and sentences: a result that is shown by Markwig et. al. in [5]. Sometimes you want to follow the notation and general background from a canonical textbooks, e.g., [1, 4, 5], and then you should declare that with a citation in the beginning of a paragraph or sentence. If you want to reuse a fairly well known result from the same textbook, indicate that with a specific citation with page number(s) or numbered environment. Include a page number, [1, p. 33], page numbers separated by a double dash, [1, pp. 33–34], or numbered environment (number connected to the environment with a tilde-symbol so it doesn't split over two lines), [1, Theorem 1], in the citation, unless you want to emphasize that you cite the entire work [1].

Remark 1.2. In mathematics, we in general *do not* use quotation marks to indicate the cited sentence or result. This is a rule of thumb regardless of any changes to notation, sentences etc. If you change notation or add assumptions to the result you cite, you can explain that your version differs from the original in the introductory text. This is a tradition in the field, and it is a consequence of the nature of the scientific material we use.

It is always better to cite a published article than a preprint, but do not cite future work unless there is a preprint available. Web pages are usually not considered scientifically sound references, but sometimes references to URLs are necessary; to make your research as reliable as possible, add the date you visited the web page to the bibliography [2]. Citing multiple works by the same authors published the same year sometimes causes trouble, but L^AT_EX finds a way [5].

Reference management with BibL^AT_EX automatically generates a reference list that includes all citations in the text, but no other items. This means that you can create your own .bib-file with all your references, even though you only cite a few of them. The .bib-file should be generated by standardized metadata from a scientific database, e.g. MathSciNet or C_{IS}, but bibitems can also be made 'manually'. Reference managers like Zotero and Word's EndNote can also export your bibitems in a .bib-file.

As a last note, be aware that the reference list tells an examiner familiar with your field a lot about your research, and you must proof read your reference list.

Red boxes in the image highlight the following LaTeX commands and their rendered equivalents:

- `\parencite{MMS22b}` is highlighted in the code editor and rendered as [5] in the preview.
- `\cite{MMS22a, MMS22b, AM69}` is highlighted in the code editor and rendered as [1, 4, 5] in the preview.
- `\cite[33]{AM69}` is highlighted in the code editor and rendered as [1, p. 33] in the preview.
- `\cite[33--34]{AM69}` is highlighted in the code editor and rendered as [1, pp. 33–34] in the preview.
- `\cite[Theorem~1]{AM69}` is highlighted in the code editor and rendered as [1, Theorem 1] in the preview.

Reference list (i.e., bibliography)

The screenshot shows a LaTeX editor interface for a "2026 UiO Bachelor thesis template". The left sidebar contains a "File tree" with files like `bibliography.bib`, `main.tex`, and `uiotools.sty`, and a "File outline" with sections like "Theorems and oth...", "Figures and tables", "Conclulsion", and "Appendix: More infor...". The main editor shows the `main.tex` file with the following content:

```
267 2025MAT2000Moe.pdf. You should use this project
268 promote yourself, for instance when you apply for
269 summer jobs, internships and even to convince your
270 favorite professor to be your master thesis
271 supervisor.
272 \section*{Appendix: More information about the
273 template}\label{sec:app}
274 In an appendix you should put lists of examples,
275 small parts of code or other supplementary
276 material. If you have a lot of supplementary
277 material, like datasets, large chunks of code
278 etc., please use a
279
280 \begin{description}
281 \item[\url{https://www.mn.uio.no/ifi/tjenester/it/hjelp/latex/uiobachelorthesis-guide.pdf}]
282 is a user guide for the document class.
283 \item[\url{https://www.mn.uio.no/ifi/tjenester/it/hjelp/latex/uiomasterfp-guide.pdf}]
284 tells how to use the uiomasterfp package to make the front page.
```

A red box highlights the `\printbibliography` command on line 269. A red arrow points from this command to the right sidebar, which displays the resulting bibliography list. The bibliography list is titled "References" and contains seven entries:

- [1] Atiyah, M. F. and Macdonald, I. G. *Introduction to commutative algebra*. Addison-Wesley Publishing Co., Reading, Mass.-London-Don Mills, Ont., 1969, pp. ix+128.
- [2] Kime, P. and Charette, F. *biber* — A BibTeX replacement for users of biblatex. Version 2.3. 2015. URL: <http://www.ctan.org/tex-archive/biblio/biber> (visited on 09/02/2016).
- [3] Maor, E. *The Pythagorean theorem*. Princeton Science Library. A 4,000-year history. Princeton University Press, Princeton, NJ, 2019, pp. xvi+263.
- [4] Markwig, H., Markwig, T., Shaw, K. and Shustin, E. 'Arctic floor plans and enumeration of complex and real multi-nodal surfaces'. In: *J. Algebraic Geom.* 31.2 (2022), pp. 261–301. DOI: 10.1090/jag/774.
- [5] Markwig, H., Markwig, T., Shaw, K. and Shustin, E. 'Tropical floor plans and enumeration of complex and real multi-nodal surfaces'. In: *J. Algebraic Geom.* 31.2 (2022), pp. 261–301. DOI: 10.1090/jag/774.
- [6] OpenAI. *UiO GPT-3.5: Large Language Model*. Open AI and University of Oslo. 2021. URL: <https://gpt.uio.no>.
- [7] Viète, F. *Opera Mathematica*. Lvgdvni Batavorvm, ex officinâ Bonaventuræ & Abrahami Elzeviriorum, 1546.

Below the bibliography list, the "Appendix: More information about the template" section is shown, containing text about the document class and links to user guides.

Show bibliography
ONLY cited references appear here!

Bibliography file

The screenshot shows a LaTeX editor interface with a file tree on the left, a code editor in the center, and a preview window on the right. The file tree lists various files, with `bibliography.bib` highlighted. The code editor shows the content of `bibliography.bib`, which contains two entries: `@book` and `@article`. A red box highlights the entire `bibliography.bib` file in the file tree and the corresponding code in the editor. A red arrow points to the `bibliography.bib` file in the file tree. A yellow box highlights the `{wi193}` label in the `@article` entry, with a label 'Internal reference label' pointing to it. The preview window shows a green document cover with the text 'UNIVERSITY OF OSLO', 'Bachelor's thesis', 'MAT2000 – Project work in Mathematics', '10 ECTS study points', 'Supervised by Kris Shaw', and 'Spring 2026'.

File Edit View Help

2026 UiO Bachelor thesis template (edit) ▾

File tree

- 2026-uio-bachelor-s-thesis-(ma...
 - bibliography.bib**
 - main.tex
 - uio-fp-navn-bm.png
 - uio-fp-navn-eng.eps
 - uio-fp-navn-eng.pdf
 - uio-fp-navn-nn.png
 - uio-fp-segl.eps
 - uio-fp-segl.pdf
 - uiobachelorthesis.cls
 - uio-masterfpbc.sty
 - uiotools.sty

Code Editor Visual Editor

Ask TeXGPT for help

2026-uio-bachelor-s-thesis-(math) > bibliography.bib

```
83 @book{Vie46,  
84   title={Opera Mathematica},  
85   author={Vi{\`e}te,  
86     Fran{\c{c}}ois},  
87   year={1546},  
88   publisher={Lvgdvni  
89     Batavorvm, ex officinâ  
90     Bonaventuræ \& Abrahami  
91     Elzeviriorum}  
92 }  
93 @article{wi193,  
94   AUTHOR = {Wiles, Andrew},  
95   TITLE = {Modular elliptic  
96     curves and {F}ermat's  
97     last theorem},  
98   JOURNAL = {Ann. of Math.  
99     (2)}
```

Recompile ▾ 2 44% ▾

UNIVERSITY OF OSLO

Bachelor's thesis

MAT2000 – Project work in Mathematics
10 ECTS study points

Supervised by Kris Shaw

Spring 2026

List of all bibliographical references with metadata

Internal reference label

Find your reference on a database (e.g., MathSciNet or zbMath Open)

[Home](#) > [Geometric & Functional Analysis GAFA](#) > Article

A new proof of Szemerédi's theorem

Published: August 2001
Volume 11, pages 465–588, (2001) [Cite this article](#)

Access provided by University of Oslo & Oslo University Hospital

[Download PDF](#) 

 [Save article](#)

[W.T. Gowers](#)





[Home](#) [Resources](#) [Reviewers](#) [Free Tools](#) [Support](#) [Help Pages](#)

[University of Oslo](#) 

[Publications](#) [Authors](#) [Journals](#) [Series](#) [Search MSC](#)

Q Search

[Show Search History](#) [Show All Fields](#)

Search Terms

Author

Gowers

AND

Author or Related

Author or Related search term

AND

Title

A new proof of Szemerédi's theorem

AND

Review Text

Review Text search term

Time Frame

☐ All Time

☒ = Year 2001

☐ Year Range to

Publication Type

☒ All

☐ Books

☐ Journals

Search

Clear

Export the BibTeX citation (contains all relevant reference metadata)



AMERICAN MATHEMATICAL SOCIETY
MATHSCINET
MATHEMATICAL REVIEWS

Home Resources Reviewers Free Tools Support Help Pages

University I Oslo 

MR1844079 (2002k:11014)

Reviewed

Article **Cite** Review PDF

Gowers, W. T. (4-CAMB-CM)
A new proof of Szemerédi's theorem.
Geom. Funct. Anal. **11** (2001), no. 3, 465–588.

Classifications

[11B25 - Arithmetic progressions](#)
[11K38 - Irregularities of distribution, discrepancy](#)
[11K45 - Pseudo-random numbers; Monte Carlo methods](#)

Citations

From References: [420](#)
From Reviews: [57](#)

Citation Formatting

Select a format to change the citation preview

BibTeX

Copy

```
@article {MR1844079,  
  AUTHOR = {Gowers, W. T.},  
  TITLE = {A new proof of {S}zemer\'edi's theorem},  
  JOURNAL = {Geom. Funct. Anal.},  
  FJOURNAL = {Geometric and Functional Analysis},  
  VOLUME = {11},  
  YEAR = {2001},  
  NUMBER = {3},  
  PAGES = {465--588},  
  ISSN = {1016-443X,1420-8970},
```

Close

Export the BibTeX citation (contains all relevant reference metadata)

zbMATH 

Documents Authors Serials Software Classification Formu

Back to M

(py:2001 & au:gowers) & ti:szemerédi's theorem

Q Fields

Gowers, W. T.

A new proof of Szemerédi's theorem. (English) [Zbl 1028.11005](#)

Geom. Funct. Anal. 11, No. 3, 465-588 (2001); Erratum 11, No. 4, 869 (2001).

The main result of the paper is the following improvement of E. Szemerédi's theorem [Acta Arith. 27, 199-245 (1975; [Zbl 0303.10056](#))]: every positive integer k , every subset of $\{0, 1, \dots, N\}$ of size at least $N(\log \log N)^{-c}$ with $c = 2^{-2^{k+9}}$ contains an arithmetic progression of length k . This has an immediate consequence also for an estimate for the least integer $M = M(k, r)$ such that every subset of $\{1, 2, \dots, M\}$ of size at least M/r contains a k -term arithmetic progression. The main in

Waerden's theorem on k term arithmetic progressions in partitions of the set $\{1, 2, \dots, M\}$ into r subsets. The main in

Citations:

[Zbl 0303.10056](#)

Cite

Review PDF

Full Text: DOI 

Metadata for Zbl 1028.11005

Format

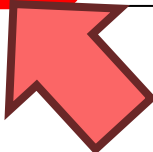
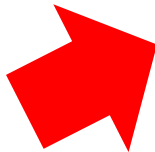
BibTeX

Result

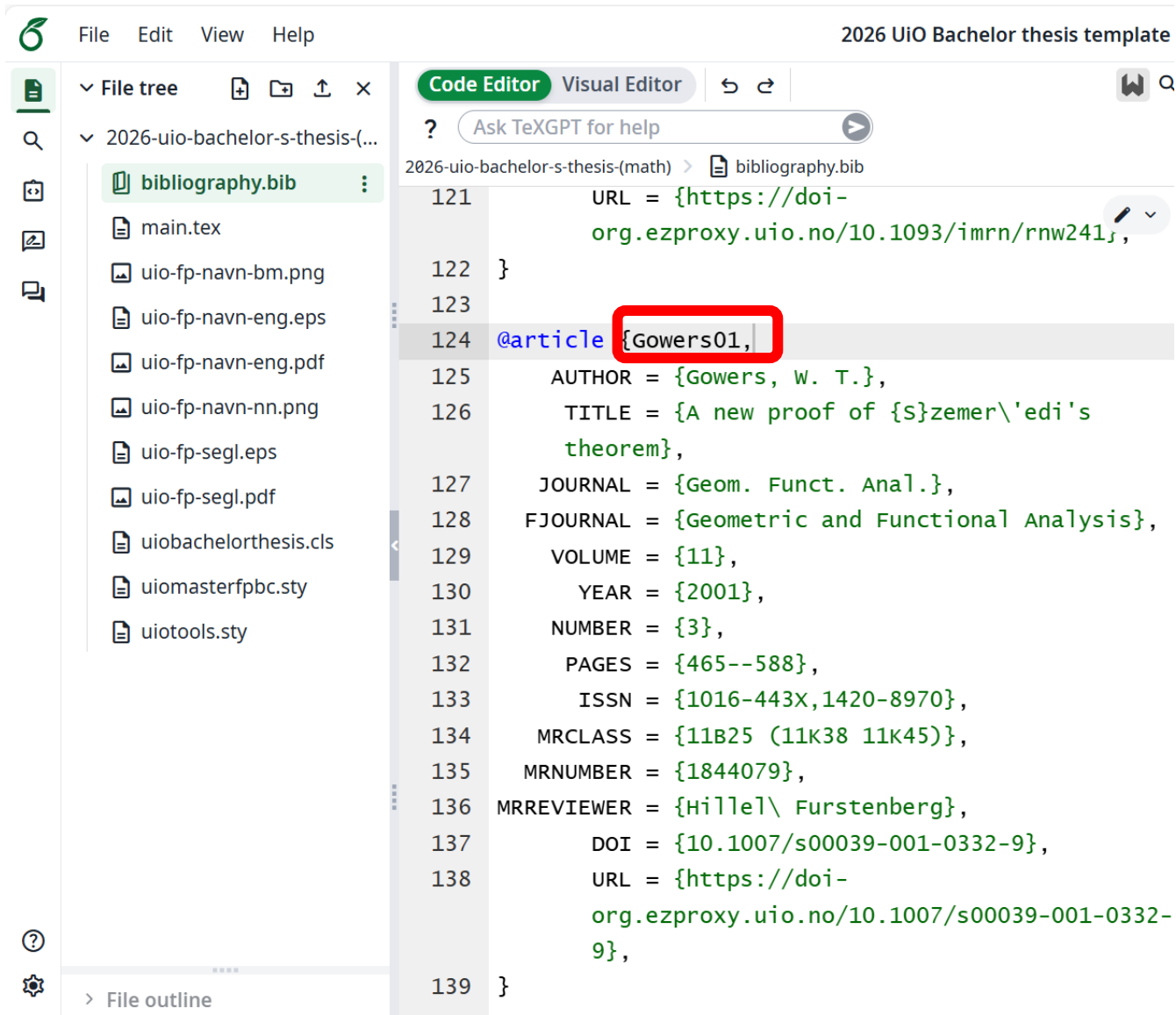
```
@article{zbMATH01657034,
  author = {Gowers, W. T.},
  title = {A new proof of {Szemer{\'e}di}'s theorem},
  fjournal = {Geometric and Functional Analysis. GAFA},
  journal = {Geom. Funct. Anal.},
  issn = {1016-443X},
  volume = {11},
  number = {3},
  pages = {465--588 (2001); erratum 11, no. 4, 869},
  year = {2001},
```

Copy to clipboard

Close



Manually paste BibTeX citation to .bib file



Bib reference label for use in text
(give it a unique and short label that you
can remember, e.g., last name + year or
initials + year)

Alternatively, use a reference
manager to add BibTeX
entries automatically!

zotero

Define citation + bibliography style using BibLaTeX

Define bibliography file

```
41 \addbibresource{bibliography.bib}
    %% ... name of your
    bibliography-file
```

```
23 %% Reference management
24 \usepackage[backend=biber,
25     sortcites = true, %% ...
26     sorts multiple citations
27     giveninits = true, %% ...
28     truncates all given names
29     to initials
30     doi = true, %% ...
31     prints DOI in reference
32     list - useful for digital
33     navigation
34     isbn = false, %% ...
35     prints ISBN in reference
36     list
37     url = false, %% ...
38     prints URL - sometimes
39     useful for digital
40     navigation, overridden by
41     online-item
42     % sortlocale = nb_NO, %%
43     ... Norwegian letters,
44     known bug in biblatex - to
45     be resolved
46     % maxcitenames=3,
47     % mincitenames=1,
48     maxbibnames=5,
49     % minbibnames=1,
50     % sorting = none, %% ...
51     will sort references in
52     order of appearance
53     citestyle=authoryear,
54     style=authoryear]
55 {biblatex}
```

Style = **numeric**, **alphabetic**,
authoryear, **authortitle**, &c.

(Most common in math)
Check with your advisor

List of BibLaTeX styles:
https://www.overleaf.com/learn/latex/Biblatex_citation_styles

Define BibLaTeX
settings (for display of
citations & bibliography)

Citations

```
\cite{bib_reference_1(, bib_reference_2, ...)}
```

```
\cite[page_number/range or other text to appear after citation]{bib_reference}
```

```
\parencite{bib_reference} → citation in parentheses
```

BibLaTeX styles:

Style = numeric, alphabetic, authoryear, authortitle, &c. (check with your advisor)

List of styles: https://www.overleaf.com/learn/latex/Biblatex_citation_styles

Activity!

Reference practice:

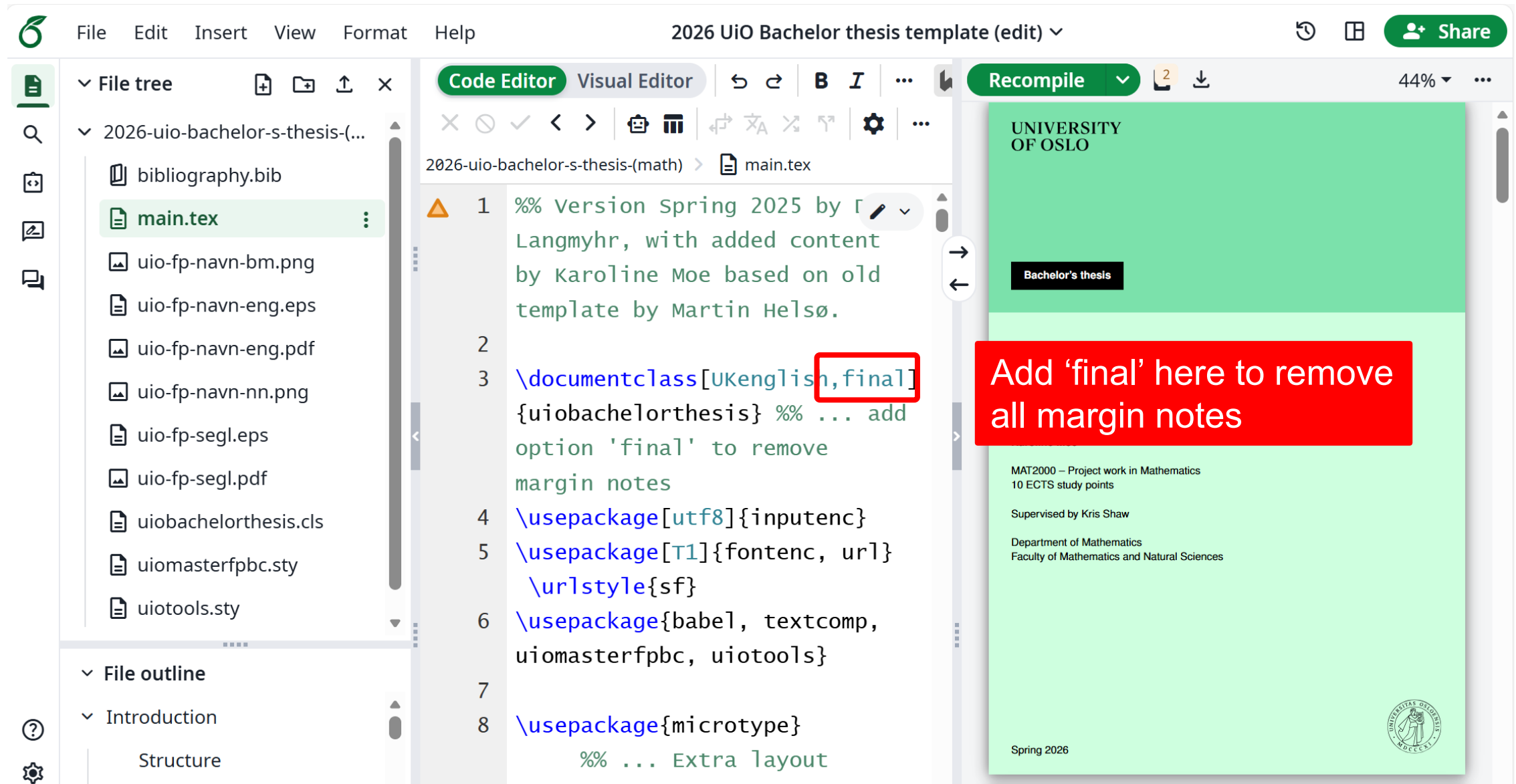
1. Find a reference
2. Add it to your .bib file and change the label
3. Cite it in your text and recompile to update the bibliography
4. Change BibLaTeX style setting to 'authoryear'

Try MathSciNet or zbMath Open
e.g., an article by Abel, N. H. from
1826

Note: for style=authoryear, you
may want to use `\parencite{}`
throughout.



Add 'final' when you are done and ready to print!



The screenshot shows a LaTeX editor interface with the following components:

- File tree:** Lists files including `bibliography.bib`, `main.tex`, and various image and PDF files.
- Code Editor:** Displays the `main.tex` file content. Line 3 shows the command `\documentclass[UKenglish,final]`, where `final` is highlighted with a red box.
- Callout:** A red box with the text "Add 'final' here to remove all margin notes" points to the `final` option in the `\documentclass` command.
- Preview:** Shows the rendered thesis template, including the University of Oslo logo, the title "Bachelor's thesis", and the course information "MAT2000 – Project work in Mathematics".

```
1 %% Version Spring 2025 by r
2 Langmyhr, with added content
3 by Karoline Moe based on old
4 template by Martin Helsø.
5
6 \documentclass[UKenglish,final]
7 {uiobachelorthesis} %% ... add
8 option 'final' to remove
9 margin notes
10
11 \usepackage[utf8]{inputenc}
12 \usepackage[T1]{fontenc, url}
13 \urlstyle{sf}
14 \usepackage{babel, textcomp,
15 uiomasterfpbc, uiotools}
16
17 \usepackage{microtype}
18 %% ... Extra layout
```

Add references using Zotero

zotero

Use Zotero

The screenshot shows the Zotero software interface. The main window displays a LaTeX document with a list of references. The 'File outline' panel on the left shows the document structure, including a 'Citations' section. A 'Reference search settings' dialog box is open, showing the 'Reference search style' set to 'Advanced reference search'. A red box highlights the text: 'To pull results directly from your reference manager, [enable one of the available reference manager integrations](#).' A red arrow points to the 'Close' button. Another red box highlights a gear icon in the bottom right corner of the document window, with a red arrow pointing to it.

Reference search settings

Reference search style

Advanced reference search

Allows to search by author, title, etc. Possible to pull results directly from your reference manager (if connected).

☐ Include results from your reference manager

To pull results directly from your reference manager, [enable one of the available reference manager integrations](#).

Close

File

Edit

Insert

View

Format

Help

2026 UI

Code Editor

Visual Editor

2026-uoio-bachelor-s-thesis-(math) > main.tex > Intro

numbers separated by a double

`\cite[33--34]{AM69}`, or number

environment (number connected

environment with a tilde-symbol

doesn't split over two lines),

`\cite[Theorem~1]{AM69}`, in the

citation, unless you want to

emphasize that you cite the entire

work `\cite{AM69}`.

103

104 A new reference: `\cite`

citation key, author, t

105

106 `\begin{remark}`

107 In mathematics, we

`\emph{do not}` use c

to indicate the cit

result. This is a rule of thumb

connected to the environment with a tilde symbol so it doesn't split over two lines,

Atiyah and Macdonald 1969, Theorem 1, in the citation, unless you want to emphasize

that you cite the entire work Atiyah and Macdonald 1969.

A new reference: `<empty citation>`

Remark 1.2. In mathematics, we in general *do not* use quotation marks to indicate the

cited sentence or result. This is a rule of thumb regardless of any changes to notation,

sentences etc. If you change notation or add assumptions to the result you cite, you can

explain that your version differs from the original in the introductory text. This is a

tradition in the field, and it is a consequence of the nature of the scientific material we

use.

2

FROM YOUR PROJECT

AM69

Bib15

Gowers01

GPTUio

Mao19

MMS22a

It is always better to cite a published article than a preprint, but do not cite future work

unless there is a preprint available. Web pages are usually not considered scientifically

Link Zotero to Overleaf

Reference managers



Papers integration

With the Papers integration, you can import your references into Overleaf. You can either import all your references at once or dynamically search your Papers library directly from Overleaf. [Learn more about Papers integration](#)

Link



Zotero integration

With the Zotero integration, you can import your references into Overleaf. You can either import all your references at once or dynamically search your Zotero library directly from Overleaf. [Learn more about Zotero integration](#)

Link



Mendeley integration

With the Mendeley integration, you can import your references into Overleaf. You can either import all your references at once or dynamically search your Mendeley library directly from Overleaf. [Learn more about Mendeley integration](#)

Link

You will be prompted to log into your Zotero account, then asked to accept the link to Overleaf:

New Key

An application would like to connect to your account

The application "Overleaf" would like to access your account.

Key Name

Overleaf

Permissions

- Access to read your personal library
- Access to read any of your group libraries

Accept Defaults

Edit Permissions

[Manage all access keys](#)

Adding references from Zotero library

103

104 A new reference: `\cite{michel mayor}`

105 FROM YOUR PROJECT

106 `\begin{remark}`

107 In mathematics, we

`\emph{do not}` use

to indicate the cit

result. This is a r

regardless of any changes to

FROM ZOTERO

`mayor_jupiter-mass_1995` *A Jupiter-mass companion to a s...*

Michel Mayor et al.

1. Search for the reference (author, title, year, ...)

2. Found it! Add reference

103

104 A new reference: `\cite{mayor_jupiter-mass_1995}`

105

106 `\begin{remark}`

107 In mathematics, we in general

`\emph{do not}` use quotation marks

to indicate the cited sent

result. This is a rule of thumb

3. Success! Citation added

✓ A new reference was added to 2026-uio-bachelor-s-thesis-(math)/bibliography.bib from Zotero

that you cite the entire work Atiyah and Macdonald 1969.

A new reference: `<empty citation>`

Remark 1.2. In mathematics, we in general *do not* use quotation marks to indicate the cited sentence or result. This is a rule of thumb regardless of any changes to the tradition of use.

4. Zotero reference added automatically to .bib file

2026 UIO Bachelor thesis template

Code Editor Visual Editor

Ask TeXGPT for help

2026-uio-bachelor-s-thesis-(math) > bibliography.bib

140

141 `@article{mayor_jupiter-mass_1995,`

142 `title = {A {Jupiter}-mass`

143 `companion to a solar-type star},`

144 `volume = {378},`

145 `issn = {0028-0836, 1476-4687},`

`url =`

`{https://www.nature.com/articles/A`

`rt1},`

146 `doi = {10.1038/378355a0},`

147 `language = {en},`

148 `number = {6555},`

149 `urldate = {2025-06-03},`

150 `journal = {Nature},`

151 `author = {Mayor, Michel and`

152 `Queloz, Didier},`

153 `month = nov,`

`year = {1995},`

File Edit View Help

2026-uio-bachelor-s-thesis-(math)

uio-fp-navn-en...

uio-fp-navn-n...

uio-fp-segl.eps

uio-fp-segl.pdf

uio-bachelor-orth...

uio-masterfpbc...

uio-tools.sty

File outline

Your Oblig requirements (due 19 Feb 2026)

The assignment must be 2-3 pages written in LaTeX, based on the UiO template for Bachelor's theses and contain the following:

- ☐ Title
- ☐ Abstract
- ☐ Introduction
- ☐ Chosen topic or result presented in a numbered environment
- ☐ Mathematical notation
- ☐ A picture, illustration, figure, graph or table with caption
- ☐ Clickable cross references
- ☐ Clickable citations and references in text in a chosen style
- ☐ Bibliography in a chosen style
- ☐ A very short plan for the project

TikZ Package (NOT mandatory for Oblig)

Constructs graphical elements directly in document

```
\usepackage{tikz}
```

```
\begin{tikzpicture}  
Drawing instructions  
\end{tikzpicture}
```



UNIVERSITY
OF OSLO

Tutorials:

https://www.overleaf.com/learn/latex/TikZ_package

<https://tikz.dev/tutorials-guidelines>

TikZ Package

Constructs graphical elements directly in document

Drawing instructions examples:

Thick blue line with arrow pointing from (x_1, y_1) to (x_2, y_2) :

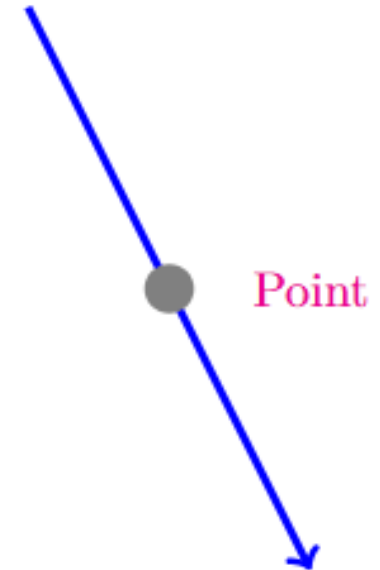
`\draw[blue, thick, ->] (x1, y1) -- (x2,y2);`

Filled gray filled-in circle centred on (x, y) with radius R :

`\fill[gray] (x, y) circle (R);`

Magenta label 'Point' at (x_3, y_3) :

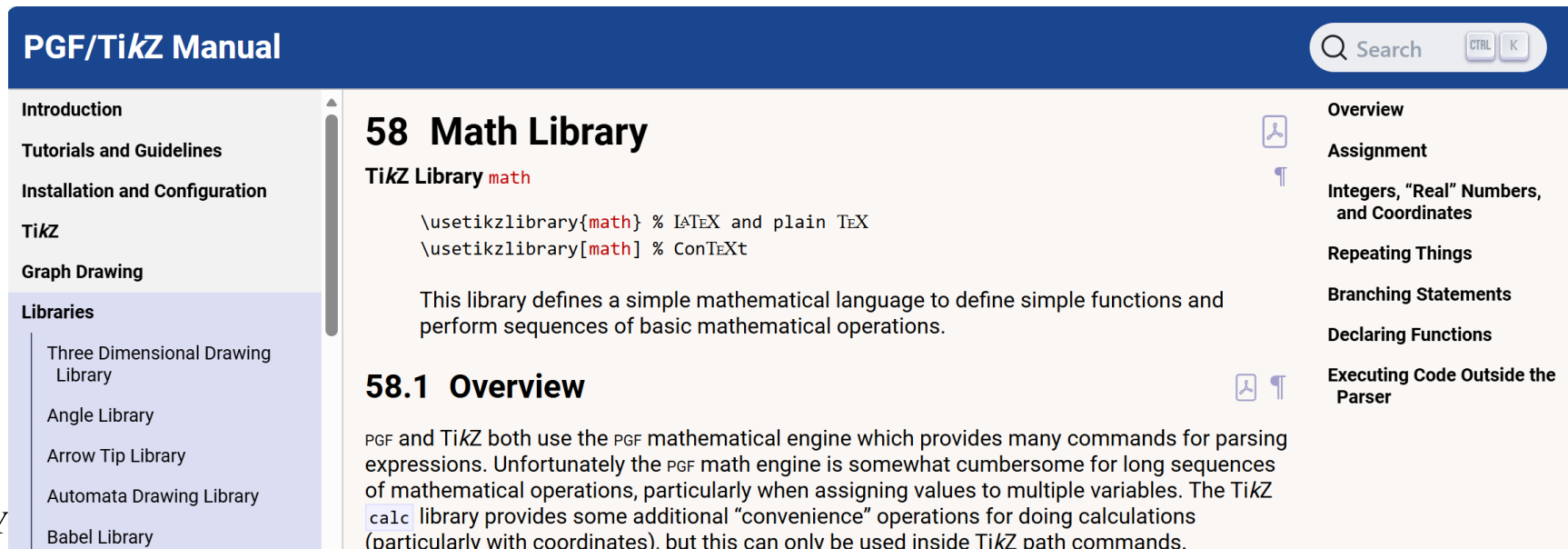
`\node[magenta] at (x3, y3) {Point};`



TikZ Libraries

Extends functionalities to create complex, specialized graphics

```
\usetikzlibrary{library_name}
```



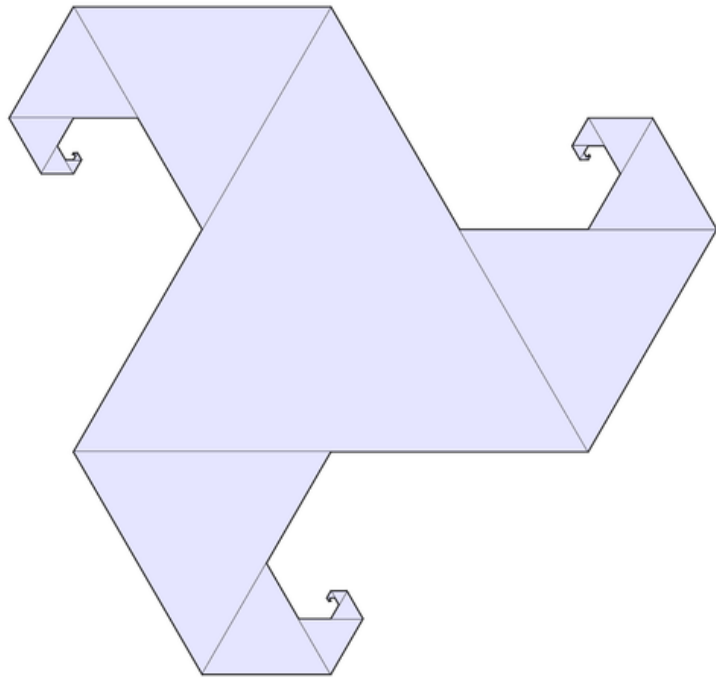
The screenshot displays the PGF/TikZ Manual interface. On the left, a sidebar lists navigation options: Introduction, Tutorials and Guidelines, Installation and Configuration, TikZ, Graph Drawing, and Libraries. The Libraries section is expanded, showing sub-libraries like Three Dimensional Drawing Library, Angle Library, Arrow Tip Library, Automata Drawing Library, and Babel Library. The main content area is titled '58 Math Library' and includes the 'TikZ Library math' section. It shows the commands `\usetikzlibrary{math}` for LaTeX and `\usetikzlibrary[math]` for ConTeXt. A paragraph explains that this library defines a simple mathematical language for basic operations. Below this is the '58.1 Overview' section, which states that PGF and TikZ use the PGF mathematical engine and that the TikZ `calc` library provides additional convenience operations for calculations. On the right side of the manual page, there is a table of contents for the Math Library, listing sections like Overview, Assignment, Integers, 'Real' Numbers, and Coordinates, Repeating Things, Branching Statements, Declaring Functions, and Executing Code Outside the Parser.



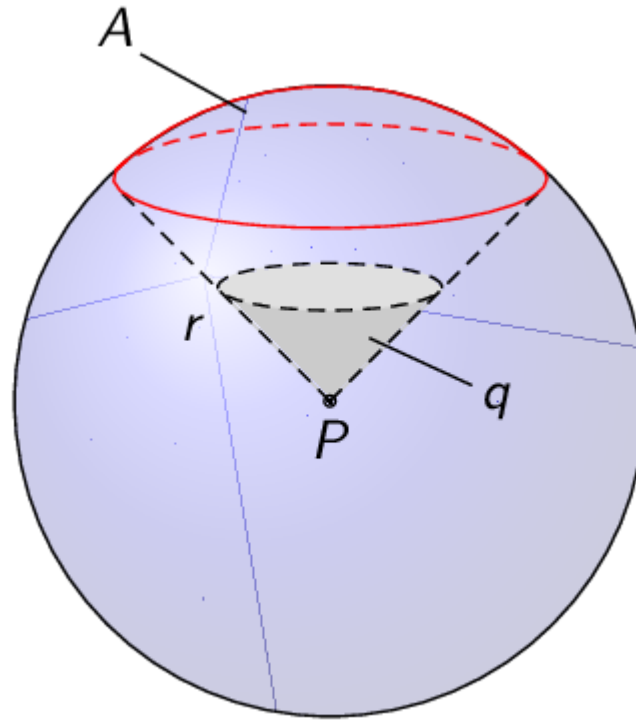
UNIVERSITY
OF OSLO

Guide to TikZ libraries: <https://tikz.dev/libraries>

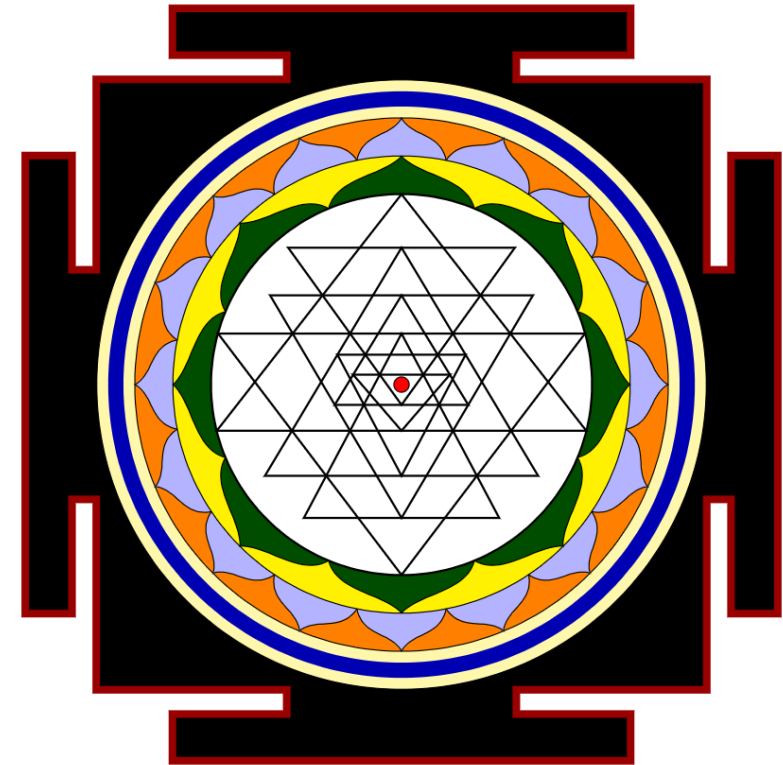
TikZ can be used for complex graphics



Replicating triangles
(Hugues Vermeiren)



Steradian cone in sphere
(Bartman)



Sri Yantra
(Bhaskar Tripathi)



UNIVERSITY
OF OSLO

More TikZ examples: <https://texample.net/>

UNIVERSITY OF OSLO

Q & A !

You can always ask at:
latexguru@ub.uio.no



Dag Langmyhr



Next week

Monday 2 February:

- **DEADLINE** for picking project + advisor

Wednesday 4 February: lectures

- AI workshop (morning)
 - Prep: watch recommended Youtube videos (to be posted via messages on course website)
- Scientificness in mathematical subjects (afternoon)



LaTeX command cheat sheets

L^AT_EX 2_ε Cheat Sheet

Document classes

book	Default is two-sided.
report	No \part divisions.
article	No \part or \chapter divisions.
letter	Letter (?).
slides	Large sans-serif font.

Used at the very beginning of a document:
`\documentclass{class}`. Use `\begin{document}` to start contents and `\end{document}` to end the document.

Common documentclass options

10pt/11pt/12pt	Font size.
letterpaper/a4paper	Paper size.
twocolumn	Use two columns.
twoside	Set margins for two-sided.
landscape	Landscape orientation. Must use dvips -t landscape.

draft Double-space lines.
Usage: `\documentclass[opt,opt]{class}`.

Packages

fullpage Use 1 inch margins.
anysize Set margins: `\marginsize{l}{r}{t}{b}`.
multicol Use *n* columns: `\begin{multicols}{n}`.
latsym Use L^AT_EX symbol font.
graphicx Show image: `\includegraphics[width=x]{file}`.
url Insert URL: `\url{http://...}`.
Use before `\begin{document}`. Usage: `\usepackage{package}`

Title

`\author{text}` Author of document.
`\title{text}` Title of document.
`\date{text}` Date.
These commands go before `\begin{document}`. The declaration `\maketitle` goes at the top of the document.

Miscellaneous

`\pagestyle{empty}` Empty header, footer and no page numbers.
`\tableofcontents` Add a table of contents here.

Document structure

<code>\part{<i>title</i>}</code>	<code>\subsubsection{<i>title</i>}</code>
<code>\chapter{<i>title</i>}</code>	<code>\paragraph{<i>title</i>}</code>
<code>\section{<i>title</i>}</code>	<code>\subparagraph{<i>title</i>}</code>
<code>\subsection{<i>title</i>}</code>	

Use `\setcounter{secnumdepth}{x}` suppresses heading numbers of depth *x*, where chapter has depth 0. Use a *, as in `\section*{title}`, to not number a particular item—these items will also not appear in the table of contents.

Text environments

`\begin{comment}` Comment (not printed). Requires verbatim package.
`\begin{quote}` Indented quotation block.
`\begin{quotation}` Like quote with indented paragraphs.
`\begin{verse}` Quotation block for verse.

Lists

`\begin{enumerate}` Numbered list.
`\begin{itemize}` Bulleted list.
`\begin{description}` Description list.
`\item text` Add an item.
`\item[x] text` Use *x* instead of normal bullet or number. Required for descriptions.

References

`\label{marker}` Set a marker for cross-reference, often of the form `\label{sec:item}`.
`\ref{marker}` Give section/body number of marker.
`\pageref{marker}` Give page number of marker.
`\footnote{text}` Print footnote at bottom of page.

Floating bodies

`\begin{table}[place]` Add numbered table.
`\begin{figure}[place]` Add numbered figure.
`\begin{equation}[place]` Add numbered equation.
`\caption{text}` Caption for the body.
The *place* is a list valid placements for the body. t=top, b=bottom, p=separate page, l=place even if ugly. Captions and label markers should be within the environment.

Text properties

Font face

Command	Declaration	Effect
<code>\textrm{<i>text</i>}</code>	<code>\rmfamily <i>text</i></code>	Roman family
<code>\textsf{<i>text</i>}</code>	<code>\sffamily <i>text</i></code>	Sans serif family
<code>\texttt{<i>text</i>}</code>	<code>\ttfamily <i>text</i></code>	Typewriter family
<code>\textmd{<i>text</i>}</code>	<code>\mdseries <i>text</i></code>	Medium series
<code>\textbf{<i>text</i>}</code>	<code>\bfseries <i>text</i></code>	Bold series
<code>\textup{<i>text</i>}</code>	<code>\upshape <i>text</i></code>	Upright shape
<code>\textit{<i>text</i>}</code>	<code>\itshape <i>text</i></code>	<i>Italic shape</i>
<code>\textsl{<i>text</i>}</code>	<code>\slshape <i>text</i></code>	<i>Slanted shape</i>
<code>\textsc{<i>text</i>}</code>	<code>\scshape <i>text</i></code>	SMALL CAPS SHAPE
<code>\emph{<i>text</i>}</code>	<code>\em <i>text</i></code>	<i>Emphasized</i>
<code>\textnormal{<i>text</i>}</code>	<code>\normalfont <i>text</i></code>	Document font
<code>\underline{<i>text</i>}</code>		<u>Underline</u>

The command (ttt) form handles spacing better than the declaration (ttt) form.

Font size

<code>\tiny</code>	<i>tiny</i>	<code>\Large</code>	Large
<code>\scriptsize</code>	<i>scriptsize</i>	<code>\LARGE</code>	LARGE
<code>\footnotesize</code>	<i>footnotesize</i>		
<code>\small</code>	<i>small</i>	<code>\huge</code>	huge
<code>\normalsize</code>	<i>normalsize</i>		
<code>\large</code>	<i>large</i>	<code>\Huge</code>	Huge

These are declarations and should be used in the form `{\small ...}`, or without braces to affect the entire document.

Verbatim text

`\begin{verbatim}` Verbatim environment.
`\begin{verbatim*}` Spaces are shown as `_`.
`\verb!text!` Text between the delimiting characters (in this case '!') is verbatim.

Justification

Environment	Declaration
<code>\begin{center}</code>	<code>\centering</code>
<code>\begin{flushleft}</code>	<code>\raggedright</code>
<code>\begin{flushright}</code>	<code>\raggedleft</code>

Miscellaneous

`\linespread{x}` changes the line spacing by the multiplier *x*.

Text-mode symbols

Symbols

<code>&</code>	<code>\&</code>	<code>-</code>	<code>_</code>	<code>...</code>	<code>\ldots</code>	<code>•</code>	<code>\textbullet</code>
<code>\$</code>	<code>\\$</code>	<code>-</code>	<code>\^{}{}</code>	<code> </code>	<code>\textbar</code>	<code>\</code>	<code>\textbackslash</code>
<code>%</code>	<code>\%</code>	<code>-</code>	<code>\^{}{}</code>	<code>#</code>	<code>\#</code>	<code>§</code>	<code>\S</code>

Accents

<code>ò</code>	<code>\`o</code>	<code>ó</code>	<code>\^o</code>	<code>ô</code>	<code>\~o</code>	<code>õ</code>	<code>\=o</code>
<code>ö</code>	<code>\.o</code>	<code>õ</code>	<code>*o</code>	<code>ø</code>	<code>\c o</code>	<code>ö</code>	<code>\v o</code>
<code>ç</code>	<code>\c c</code>	<code>ç</code>	<code>\d o</code>	<code>ø</code>	<code>\b o</code>	<code>ö</code>	<code>\t oo</code>
<code>œ</code>	<code>\OE</code>	<code>æ</code>	<code>\ae</code>	<code>Æ</code>	<code>\AE</code>	<code>ä</code>	<code>\aa</code>
<code>ø</code>	<code>\o</code>	<code>Ø</code>	<code>\O</code>	<code>ı</code>	<code>\I</code>	<code>Ł</code>	<code>\L</code>
<code>ı</code>	<code>\j</code>	<code>ı</code>	<code>\i</code>	<code>ı</code>	<code>\i</code>	<code>ı</code>	<code>\i</code>

Delimiters

<code>'</code>	<code>“</code>	<code>{</code>	<code>[</code>	<code>(</code>	<code><</code>	<code>\textless</code>
<code>,</code>	<code>”</code>	<code>}</code>	<code>]</code>	<code>)</code>	<code>></code>	<code>\textgreater</code>

Dashes

Name	Source	Example	Usage
hyphen	-	X-ray	In words.
en-dash	--	1-5	Between numbers.
em-dash	---	Yes—or no?	Punctuation.

Line and page breaks

`\` Begin new line without new paragraph.
`\*` Prohibit pagebreak after linebreak.
`\kill` Don't print current line.
`\pagebreak` Start new page.
`\noindent` Do not indent current line.

Miscellaneous

`\today` March 28, 2017.
`\sim` Prints ~ instead of `\^{}{}`, which makes ~.
`~` Space, disallow linebreak (W. J. ~Clinton).
`\@.` Indicate that the . ends a sentence when following an uppercase letter.
`\hspace{l}` Horizontal space of length *l* (Ex: *l* = 20pt).
`\vspace{l}` Vertical space of length *l*.
`\rule{w}{h}` Line of width *w* and height *h*.

Tabular environments

tabbing environment

`\=` Set tab stop. `\>` Go to tab stop.
Tab stops can be set on “invisible” lines with `\kill` at the end of the line. Normally `\` is used to separate lines.



UNIVERSITY
OF OSLO

<https://wch.github.io/latexsheet/>

<https://tug.ctan.org/info/undergradmath/undergradmath.pdf>