Math 201

Technical Writing

with **LATEX**

```
twoside
package[letterpaper,
t=0.5in, top=0.5in,
, right=0.5in
re{empty}
ottom d
\usepackage{listings}
\setlength{\parindent}{0pt}
\usepackage[usenames, dvips
\usepackage[table]{xcolor}
package{tikz,calc,shape
```

Course Information

Meeting Details

Instructor	Lauren Williams, PhD	**Semester**	Spring 2023
Meeting Times	MWF 9 - 9:50	**Credits**	3
Meeting Location	Library 128	**Prerequisites**	None

Office Hours

Monday	10 - 11 am
	2 - 2:50 pm
Tuesday	9 - 11 am
Wednesday	2 - 2:50 pm
Friday	12 - 12:50 pm

Office Location Old Main 404

Drop in with any questions or just to chat during office hours; no appointment or notice required.
Appointments outside these times (including via Zoom) are available by request.

Description

In this course, you will learn how to write technical documents, articles and theses using the LATEX document preparation system. The course will progress from learning the basics of how LATEX works and how to get started, to writing mathematical formulas, lists, tabular information, cross-referencing, creating and using illustrations and graphics, presentations, and troubleshooting LATEX errors.

Objectives

On successful completion of the course, you will be able to:

• install LATEX on your personal device;

• choose a class for various types of documents;

• create custom environments and definitions;

• adjust margins, paragraph styles, fonts, colors, and headings to exact specification;

• include tables, images, lists, columns, boxes, and other document features;

• use the hyperref package to create references and links, both internal and external;

• create bibliographies using the bibtex package;

• find and choose useful packages from external sources;

• create technical images using the TikZ package;

• create a variety of professional documents, including letters, resumes/curriculum vitaes, presentations, posters, and articles.

What is LaTeX?

LaTeX is a typesetting language used to produce professional documents, including articles, books, letters, posters, slide presentations, technical drawings, and more.

Why Is This A Math Course?

You will be creating documents entirely within a basic text environment. There are no menus to add shapes, adjust margins, or add colors. All of it must be done with code, and it requires a surprising amount of mathematics. We'll format documents using variables and algebra. Technical diagrams require a lot of trigonometry. We'll make use of recursion and other algorithms to simplify repetitive tasks. In short, it's an incredibly useful application of mathematics.

When Would I Use LaTeX?

LaTeX does have a "learning curve," meaning it's tricky to get started. But once you get the hang of it, you might find yourself using it regularly. It is more convenient for writing lab reports or homework assignments that require mathematical expressions. Even non-technical documents like essays look more polished. If you'll be applying for jobs or graduate school, your application materials will stand out with LaTeX. You can create posters and presentations for your next conference. Many academic journals in the sciences require publications to be submitted in LaTeX format, and you'll be glad to be familiar with it before writing your article or thesis. It could even open additional career options in editing or technical writing. Many of us fans of LaTeX find excuses to use it every day, and there's always a new trick to learn.

Materials

Textbook

We will be utilizing the textbook

LaTeX Beginner's Guide - Second Edition
by Stefan Kottwitz
https://www.packtpub.com/product/latex-beginners-guide-second-edition/9781801078658

The textbook will be a useful and reasonably priced reference throughout the course. However, we will expand on its foundation with a number of free resources and manuals.

Software

LaTeX itself is free, as are all packages. To build documents on your personal device, you'll need a text editor, and there are many free options along with some that can be bundled with the LaTeX installation if you choose. We will begin class with an overview of the installation process, so you won't need anything before we begin.

Hardware

You can use the computers in the lab, or bring your personal laptop if you'd prefer. Requirements are very minimal, and there is a distribution for Windows, Mac, and Linux operating systems. Note that tablets are generally not the best choice for LaTeX.

Assignments

This is a project based course. Each assignment will be designed to expand and test your LᴬTEX skills, and result in several documents that may be useful to you outside the course.

Each assignment will include a rubric with all required specifications, but you are encouraged to go beyond the basics. Several points of each assignment (approximately 10%) will be reserved for extra features that you can choose to include in your assignment. Suggestions for these extra features will be provided, but you are free to include anything you feel would improve the appearance or functionality of the final product.

Extensions and Late Work

If you will not be able to submit your work by the deadline, please let me know as soon as possible. You do not have to have an "official" reason for an extension, but you will need to let me know when you will be able to complete the work (up to one week from the original deadline). This is so I am able to extend the same extension to all students. Late work will otherwise be accepted up to two days after the deadline with a 10% penalty. Work will not be accepted after this period, so I am able to return graded work to other students.

Grading

Your grade in this course will be the (weighted) average of all project grades. Some projects may be worth more points than others, depending on the complexity of the assignment. *No assignment grades will be dropped when calculating your final grade.* Your letter grade in the course will be based on the Mathematics Department grading scale:

F	D	D+	C	C+	B	B+	A
0%	60%	67%	70%	77%	80%	87%	90%

University Policies and Information

Food and Drink in the Classroom

In light of the COVID-19 situation, eating is not permitted in classrooms, labs, or other academic spaces. A water bottle or cup with a lid (and preferably a straw) is permitted to be used in classrooms and labs.

ADA

Mercyhurst University values inclusion and is committed to the goal of providing equal opportunities for all. Mercyhurst abides by federal, state, and local laws in admissions, employment, academic programs, and all services provided. Mercyhurst University is committed to complying with its obligations under the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act and the Fair Housing Act to ensure that a person with a disability is granted reasonable accommodations, when such accommodations are necessary, to afford that person equal opportunity to obtain a Mercyhurst education and use university facilities. Please refer to the HUB

https://lakersmercyhurst.sharepoint.com/sites/StudentsHub

and select the Services tab, then ADA Accommodations from the dropdown for instructions to request an accommodation. You may also contact Susan Reddinger, ADA Coordinator, ADA@mercyhurst.edu, 814-824-2362, Egan Hall 200. For students with questions about Academic Support, please refer to the HUB

https://lakersmercyhurst.sharepoint.com/sites/StudentsHub

and select the Academic Resources tab, then Academic Support for more information.

Title IX Information

Mercyhurst is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence. Please refer to the HUB:

https://lakersmercyhurst.sharepoint.com/sites/StudentsHub

and select the Resources tab, then Title IX – Sexual Respect from the dropdown for more information. If you would like to file a sexual misconduct complaint, please contact Ann Miller, Title IX Coordinator and Compliance Officer, titleix@mercyhurst.edu, 814-824-2363. Please be aware that in compliance with Title IX, educators must report incidents of sexual assault/harassment, stalking, and domestic/dating violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to the Title IX Coordinator (or any of the Deputy Title IX Coordinators).

Academic Honesty

Students are expected to contribute actively to the development of an atmosphere of academic integrity. Mercyhurst University assumes, therefore, that students will not resort to plagiarism or any other form of academic dishonesty. Students who engage in willful academic dishonesty may be subject to a broad range of sanctions. At the discretion of their instructor, they may be required to redo the plagiarized assignment, or they may receive an automatic F for the exam/assignment and/ or course. Students found to be in collaboration with other students involved in willful academic dishonesty are also subject to disciplinary action.

Math 201 Schedule

Note: This schedule is meant as a guide. Many topics and skills will not fit neatly into any particular week, and will be covered as necessary.

Week	Topic
1 Jan 16 - 20	**Getting Started with LaTeX** Installation and creating your first document.
2 Jan 23 - 27	**Document Classes and Basic Features** Creating different types of documents and writing mathematics.
3 Jan 30 - Feb 3	**Document Features** More on tables, lists, images, and other useful environments.
4 Feb 6 - 10	**Basic Formatting** Setting margins, fonts, and colors.
5 Feb 13 - 17	**More Formatting** Using boxes and other formatting features and packages.
6 Feb 20 - 24	**Custom Environments and Definitions** Making your own environments
7 Feb 27 - Mar 3	**Links and References** The hyperref package.
8 Mar 6 - 10	**Spring Break** No Classes
9 Mar 13 - 17	**Style Files** Create your own style files to use in any document.
10 Mar 20 - 24	**Figures and Images** Inserting graphics into documents and an overview of the TikZ package.
11 Mar 27 - 31	**Contents and Indices** Generating tables of contents, table and image lists, and indices.
12 Apr 3 - 7	**Bibliographies and Citations** Formatting and including references in multiple common styles.
13 Apr 10 - 14	**Beamer** Creating Beamer class documents for presentations.
14 Apr 17 - 21	**Other document classes** Exams, posters, and other useful document types.
15 Apr 24 - 28	**More Packages** Extending the utility of LaTeX with additional packages.
16 May 1 - 5	**More Packages** Extending the utility of LaTeX with additional packages.