

INTRODUCTORY L^AT_EX WORKSHOP

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Course Page:

- <http://www.iitg.ac.in/stud/j.rakesh/latex>

Objectives: The workshop focused on comprehensive topic discussions on L^AT_EX concepts. The session included introduction to various features of L^AT_EX with some advanced topics that will help to write our academic material as well as research papers that are suitable for publication in reputed journals.

Prerequisites: Your Interest to learn a high-quality typesetting system for your academic life.

Tentative Outline: Hand's On Technical Session Details.

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| ⊗ Session I (Preamble and Structure) | Time: 90 Min. |
| – Document Structure, Packages | – Lists – Bullets and Numbering |
| – Text Formatting | – Sectioning and Chapters |
| ⊗ Session II (Math Mode & Algorithm) | Time: 60 Min. |
| – Mathematical Typeset | – Working with Images |
| – Alignments | – Define new environment |
| ⊗ Session III (Tables & Graphics) | Time: 60 Min. |
| – Tables | – CSV File Handling |
| – Tikz & Flowchart | – Algorithm Writing |
| ⊗ Session IV (Academic Documents) | Time: 90 Min. |
| – Header and Footer | – Bibliography and Citations |
| – Journal Class (Elsevier, IEEE) | – Report / Thesis |
| ⊗ Session V (Beamer & CV) | Time: 90 Min. |
| – Beamer | – Modern CV |
| – Letter Writing | – Review |

Installation will be done before Session start. You have to come atleast 30 min earlier to finish the installation.

Day-1: Session -I & Session-II & Session-III.

Day-2: Summary of Day-1 and Doubt clearing. Session -IV & Session-V.

Resources: Please download following things before come into the session.

- Texlive: (Windows) <https://172.16.68.2/~intra/soft/texlive2015.iso>
- Texlive: (Linux) <https://www.tug.org/texlive/quickinstall.html>
- Texmaker: <http://www.xmlmath.net/texmaker/download.html#windows>
- Adobe Reader: <https://172.16.68.2/~intra/soft/AdobeRdr90.exe>
- Texstudio: <https://www.texstudio.org/#download>

Brief introduction about sessions:

- **Document Structure and Package:** In this part we learn how to write your first document in \LaTeX . Before that I will brief you about `preamble`. In the preamble you have define the type of document you are writing, the language and several other elements. Your body of the text must enclosed in the `\begin{document} \end{document}` tags. We will explore more in the session.
- **Text Formatting:** In this part basic text formatting tools will be explained: how to make italics, bold, underline and how to make paragraph and spacing between two paragraph.
- **Lists – Bullets and Numbering:** In \LaTeX you can easily create a fancy list with `itemize` option. We will explore more about it.
- **Sectioning and Chapters** IN this part we will learn how to make section and chapter. Documents usually have some levels of chapters and/or sections to keep its contents organized. \LaTeX supports this type of organization and also customization of the sectioning and numbering.
- **Mathematical Typeset** Basic equations in \LaTeX can be easily “programmed”. We will learn how to write any mathematical expression without any worry about the typesetting.
- **Algorithm Writing** Using the package `algorithm2e` and `algorithmic` we will learn how to write algorithm in very style.
- **Alignment and New Environment:** The standard \LaTeX tools for equations may lack some flexibility, causing overlapping or even trimming part of the equation when it’s too long. We can surpass this difficulties with `amsmath`.
- **Table** Tables are common elements in most scientific documents, \LaTeX provides a large set of tools to customize tables, change the size, combine cells, change the colour of cells and so on. This session explains how.
- **CSV File Handling** In this part we will learn how to call data store in a csv file in your `.tex` file and make table automatically.
- **Images:** Images are essential elements in most of the scientific documents. We will learn how to handle images and make them look exactly what you need. In this session is explained how to include images in the most common formats, how to shrink, enlarge and rotate them, and how to reference them within your document.
- **Tikz & Flowchart** If you need to include simple diagrams or figures in your document, you can easily create them with \LaTeX commands. `picture` and `tikz` are two such environment. In this session some of the basics will be explained: lines, dots, curves, circles, rectangles, etc by means of simple examples. We will also be looking at creating flowcharts in TikZ.
- **Header & Footer** \LaTeX has some predetermined styles that change the way the header and the footer are displayed. The footer and the header can also be customized to fit any particular layout.

- **Bibliography and Citation** When it comes to bibliography management packages, there are three main options in \LaTeX : `bibtex`, `natbib` and `biblatex`. *Biblatex* is a modern program to process bibliography information, provides an easier and more flexible interface and a better language localization than the other two options. We will explain how to use *biblatex* to manage and format the bibliography in a \LaTeX document.
- **Report / Thesis** In this part we will learn how to write your project report using predefined document class `report`.
- **Journal Class:** In this part we will learn how to handle journal classes. Elsevier document class (`elsarticle`) for typeset journal articles and IEEE document class (`IEEEtran`) for typeset journal, conference articles will be discussed in this part.
- **Beamer:** Beamer is a \LaTeX class to create powerful, flexible and nice-looking presentations and slides. This session explains the most common features to create a presentation: make the title page, add a logo, highlight important points, make a table of contents and add effects to the presentation.
- Often when doing a presentation we'll want to reveal parts of a frame one after the other. The simplest way to do this is to use the `\pause` command but there are many other overlay options available in \LaTeX . In this session we will learn how to add simple but eye-catching animation in your slide.
- **Modern CV:** In \LaTeX we can write fancy cv in a very easy way. I will give you a style file which contains various formats to write cv for your academic purpose.

Apart from this there are various other things which we will explore in the workshop.