

LaTeX Workshop: Research Article Writing Using LaTeX

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1. What is LaTeX? Why Use it for Research?

LaTeX is a high-quality scientific typesetting system used for writing:

- Research papers (IEEE, Elsevier, Springer)
- Thesis and dissertations
- Mathematics, AI, ML, science documents

Why researchers prefer LaTeX:

- Professional and consistent formatting
- Automatic numbering (tables, figures, equations)
- Handles large documents easily
- Powerful citation management using BibTeX
- Required by top journals and conferences

2. How to Download LaTeX Tools

Install MiKTeX (Windows)

<https://miktex.org/download>

Enable: **Install missing packages automatically**

Install TeXstudio

<https://www.texstudio.org>

Steps:

1. Install MiKTeX
2. Install TeXstudio
3. In TeXstudio → Set compiler: PDFLaTeX

3. What You Will Learn (Simple Codes)

A. Title Code

```
\title{My Research Paper}  
\author{Your Name}  
\date{\today}  
\maketitle
```

B. Mathematics Example

Inline example: $E = mc^2$

Displayed equation:

$$\int_0^{\infty} e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$$

```
\[ \int_0^{\infty} e^{-x^2} dx = ... \]
```

C. Table Example

```
\begin{table}[h!]  
  \centering  
  \begin{tabular}{|c|c|}  
    \hline  
    Roll & Marks \\ \hline  
    1    & 85   \\ \hline  
    2    & 90   \\ \hline  
  \end{tabular}  
  \caption{Sample Table}  
\end{table}
```

D. Insert Image

```
\usepackage{graphicx}

\begin{figure}[h!]
\centering
\includegraphics[width=0.5\textwidth]{image.jpg}
\caption{Example Image}
\end{figure}
```

E. Research Citation Using BibTeX

In-text citation: According to `\cite{einstein}` ...

Bibliography:

```
\bibliographystyle{IEEEtran}
\bibliography{references}
```

Example entry in `references.bib`:

```
@article{einstein,
author={A. Einstein},
title={Theory of Relativity},
year={1905}
}
```

4. After the Workshop You Will Be Able To

- Install and use MiKTeX + TeXstudio
- Write research articles professionally
- Insert equations, tables, figures, and images
- Use BibTeX for citations
- Prepare IEEE/Elsevier/Springer format papers
- Produce clean, error-free PDFs

Thank You!