



# SREE SANKARA COLLEGE KALADY

## RESEARCH AND POSTGRADUATE DEPARTMENT OF CHEMISTRY

Kalady (P. O), Ernakulam (Dt.), Kerala - 683574

(Affiliated to Mahatma Gandhi University and included under Sec. 2(f) list/and 12 (B) of UGC Act and Re - accredited by NAAC with B++ grade)



### Add-on Course on

## Introducing L<sup>A</sup>T<sub>E</sub>X for Scientific Writing

### CONCEPT NOTE

LaTeX (pronounced "lay-tech") is a method of creating documents using plain text, stylized using markup tags, similar to HTML/CSS. LaTeX is a free open source software which runs on any operating systems like Windows, Linux and Mac. LaTeX is the de facto standard for the communication and publication of scientific documents in fields like mathematics, computer science, engineering, physics, chemistry (and gaining traction in: economics, philosophy, and political science). In LaTeX, the author doesn't stylize the document directly, like in a word processor such as Microsoft Word, LibreOffice Writer, or Apple Pages; instead they write code in plain text that must be compiled to produce a PDF document. One of the biggest advantages in using this software is that the user need not concentrate on the layout of the document because LaTeX takes care of all that by itself, resulting in really impactful and professional documents.

Latex is used for various purposes. It is a powerful tool to make highly professional and elegant looking Résumé. A Résumé or CV prepared using LaTeX makes the first impression on the particular employer and gives a unique look among the crowd.

LaTeX is used by researchers, scientists, universities and publishers around the world and it is a skill sought after by many typesetting & publishing companies.

### COURSE OBJECTIVE

The course has been designed for students with little/no programming experience. The major objectives in running this course are

- ☞ Provide an introduction to technical writing, complex graphics, and computer presentations with LaTeX
- ☞ Create basic types of LaTeX documents (article, report, letter, book)
- ☞ Format words, lines, and paragraphs, design pages, create lists, tables, references, and figures in LaTeX



- ☞ Typeset complicated mathematics: beginning with basic formulas (inline) and centered and numbered equations and aligning multi-line equations. In particular, you will learn how to typeset mathematics symbols such as roots, arrows, Greek letters, and a wide variety of mathematical operators.
- ☞ Listing content and references: creating a table of contents and lists of figures and tables; as well as how to cite books, create bibliographies, and generate an index
- ☞ Create professional presentation slides using LaTeX

## LEARNING OUTCOMES

After the completion of the course, participants are expected to,

- Hone the skill of using high-quality typesetting system, LaTeX for publication of research papers, theses and book chapters.
- Typesetting of complex mathematical formulae using LaTeX.
- Create Tables, Graphics and Pictures Lists, Arrays and Bibliography by using LaTeX.
- Create Slides with Beamers and posters.

## COURSE DETAILS

Research scholars, PG and UG students of any discipline who have enrolled as a student at Sree Sankara College Kalady can join the course. The duration of the course is 30 hours including the hands-on training at the computer lab. There will be an assessment on completion of the programme and certificates will be awarded to the successfully completed participants.

## COURSE SYLLABUS

### ❖ Module - 1 (2 Hours)

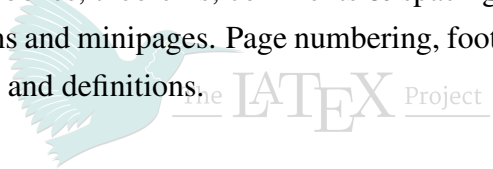
Introduction to LaTeX. Various integrated development environment (IDE) for LaTeX. Installation of TexStudio. Online Overleaf access. Structure of LaTeX document. Defining class of the document through `\documentclass`. Packages and different environments. Writing the first LaTeX content.

### ❖ Module - 2 (1 Hours)

Creating a Title, chapters and sections and their labeling. Additionally, basics of LaTeX syntax will be introduced. Page style, fonts, font sizes, font styles.

### ❖ Module - 3 (2 Hours)

Labelling Table of Contents, font Effects, coloured text, boxes, theorems, comments & spacing special characters, line breaking. Columns, multi-columns and minipages. Page numbering, foot notes, headers and footers. Fancy page styles. Short cuts and definitions.



❖ **Module - 4** (5 Hours)

Introduction to mathematics environment, writing Greek symbols and some basic mathematics type structure like fractions, superscript, subscript, overline, underline etc.

❖ **Module - 5** (5 Hours)

Matrix, determinant and other similar structure. Equations and Arrays. Equation references. Introduction to `amsmath` package. Various mathematical operation symbols.

❖ **Module - 6** (5 Hours)

Inserting pictures and tables. Special environments `enumerates`, `tabular`, `cases` etc. Citation in LaTeX using BibTeX. Creating reference database as `.bib` file. Bibliography styles.

❖ **Module - 7** (3 Hours)

Presentations in LaTeX. Introduction to `beamer` class. Themes of beamer presentations.

❖ **Module - 8** (3 Hours)

LaTeX for chemical structures and formulae, `chemfig` package. Orbital diagrams. Introduction to `tikz` - tool to create graphic elements. Drawing basic shapes in `tikz`

❖ **Module - 9** (4 Hours)

Familiarizing Overleaf and different templates. Journal article templates in Overleaf. Creating CVs in LaTeX.

There will be hands-on lab sessions for all the modules and by the end of the course participants will be able to write assignments, articles, reports etc. in LaTeX by their own.

## CONTACT INFORMATION

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