

# SKILL ENHANCEMENT COURSE

## Semester II

### PHYSEC-1 (Theory): Typesetting in LaTeX

30 Lectures

2 Credits

#### Basic Syntax and Semantics

TeX/LaTeX word processor, preparing a basic LaTeX file, Preparing an input file for LaTeX, document structure, Compiling LaTeX File;

Sentences and Paragraphs, bold text, italicized text, underlined text, emphasizing text, quotations, special text symbols, symbols from other languages, dashes, footnotes, line breaks, line spacing, left-right alignment, indentation.

Document class: Some basic document classes (article, report, letter), document class options: font size, layout options (single column, two columns), title page: maketitle options, abstract.

Sectioning: Different sectioning commands, section numbering, page breaks.

#### Advanced Options

**Fonts:** Changing font family, changing font style, changing font size;

**Lists:** itemized lists, enumerated lists, multilevel listing;

**Tables:** tabular and table environment, basic usage;

**Labels:** basic usage and cross-referencing within the document;

**User Commands:** Defining and redefining commands

#### Mathematical Formulae and Equations

Different mathematics environment: Inline math, displayed math, displayed and numbered equations.

Mathematical symbols: Greek letters, mathematical operators, power and indices, fractions, roots, sums and integrals, brackets, matrices and arrays, miscellaneous symbols.

Equations: Equation numbering, omitting numbering, eqnarray environment, aligning equations, cases environment,

#### Useful Packages

- Xcolor package: basic usage;
- Geometry package: basic usage, page size, page orientation, text height-width, resizing margins.
- Graphicx package: basic usage, importing external graphics, sizing options, figure environment, captions.
- Hyperref package: basic usage, linking external urls.
- Amsmath, amssymb packages: basic usage, align environment,
- Physics package: basic usage; bracing, vector notation, operators, derivatives, matrices.

#### Special Pages

Making table of contents, making index and glossary; Bibliography: thebibliography environment, basic usage, different bibliographic styles, citing bibliographic entries within text.

## Presentation

Beamer document class: options, title page options, themes, colorthemes; Creating slides with beamer: frames, frame options, animation, columns, blocks,

## Reference Books

- LaTeX – A document preparation system, Leslie Lamport, Pearson Education
- LaTeX Wikibook: <https://en.wikibooks.org/wiki/LaTeX>

## PHYSEC-1 (Practical): Typesetting in LaTeX

30 Lectures

1 Credit

**Using LaTeX for Documents: (Students should get themselves familiarized to use different LaTeX environment and packages as and when required to prepare a document.)**

- Preparing a report type document with figures, tables, mathematical formulae, numbered equations, and bibliography using LaTeX.
- Preparing an article type document with figures, tables, mathematical formulae and numbered equations using LaTeX.
- Preparing a letter using LaTeX.
- Preparing a scientific presentation containing pictures, formulae, tables, lists, etc. using LaTeX.
- Using LaTeX for standalone mathematical formulae / equations.

## Reference Books

- LaTeX – A document preparation system, Leslie Lamport, Pearson Education
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