LaTeX TYPESETTING FOR BEGINNERS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
LaTeX Typesetting for Beginners	2	0	0	2	Class XII	NIL

Learning Objectives: The objective of this course is to introduce:
- LaTeX, a high-quality open-source typesetting software that produces professional prints and PDF files for research articles and books in all subjects, and languages.
- Typesetting in Indian languages using LaTeX by transliteration and ITRANS packages.

Learning Outcomes: After completion of the course the learner will be able to:
- Prepare a LaTeX document with title page including contents, references, and index.
- Understand the Indian language transliteration package (ITRANS-processor) for typesetting Sanskrit, Hindi, Punjabi, Malayalam, etc. using LaTeX.

UNIT-I: Getting Started with LaTeX   (24 hours)
Installing and using LaTeX for creating a first LaTeX document; Formatting text and understanding LaTeX commands and environments; Designing pages, Creating a book with chapters and table of contents, Creating and customizing lists, Including images, and creating tables with captions.

UNIT-II: Cross-References, Index, Bibliography and Large Documents   (16 hours)
Setting labels and references, Hyperlinks; Customizing the table of contents, Generating an index, Creating a bibliography; Writing basic math formulas and equations; Developing large documents by splitting the input and creating front/back matter.

UNIT-III: Typesetting in Indian Languages using LaTeX   (20 hours)
Transliteration symbols with illustrative examples of the Indian languages, such as Sanskrit, Hindi (Devanagari), Punjabi, and Malayalam; Creation of the transliterated document for typesetting in Devanagari (for Sanskrit, Hindi, and Marathi), Gurumukhi (for Punjabi), and Rachana (for Malayalam); ITRANS pre-processor package to convert English-encoded text into various Indian language script such as Gujarati, Bengali, Kannada, Tamil, Telugu, etc.

Essential Readings
1. Kottwitz, Stefan (2021). LaTeX Beginner's Guide (2nd ed.). Packet Publishing Ltd.
2. Nambudiripad, K.B.M. (2014). LaTeX for Beginners. Narosa Publishing House, Delhi.
3. https://ctan.org/pkg/devanagari; https://www.ctan.org/pkg/gurmukhi-singh
4. https://ctan.org/tex-archive/language/indian/itrans
Suggested Reading
- Lamport, Leslie (1994). LaTeX: A Document Preparation System, User's Guide and Reference Manual (2nd ed.). Pearson Education. Indian Reprint.

Practical Exercises: Getting started with free open-source software LaTeX for typesetting documents from chapter 1 of the text book [1]: LaTeX Beginner's Guide (2nd ed.) by Stefan Kottwitz for installing and using LaTeX. Learners are required to:

- Design a LaTeX document by choosing title, author, date, address, page dimensions, margins, adjust line spacing, add footnotes, and orientation.
- Create a document with bulleted lists, numbered lists, and definition lists. Furthermore, modify the document with compact and customized versions of such lists, including spacing adjustments and interrupting and resuming.
- Create tables, adding captions to tables, putting text into columns, spanning columns and rows, using LaTeX packages to auto-fit columns.
- Generate a document by customizing the table of contents, lists of figures and tables, producing an index pointing to relevant information for keywords and phrases.
- Typesetting fine-tune math expressions, align and number equations, and use various math symbols from the amsmath package in LaTeX.
- Generate a list of five books related to your field of interest under an automatically generated title 'Bibliography', using thebibliography command in LaTeX. Illustrate how these references are cited in the body of a document.
- Create a LaTeX file to manage large documents consisting of several LaTeX files by splitting the input, including front and back matter and a separate title page.
- Transliterate these six names: Aryabhata, Arthashastra, Bhaskaracharya, Chanakya, Ganita Bharati, and Shankaracharya, and write them in itemize form using Devanagari package in LaTeX. Also use the verbatim environment to display the LaTeX code.
- Typeset ten words of your choice using ITRANS pre-processor package in LaTeX to convert English-encoded text into any one Indian language script.

Teaching Plan (SEC Paper: LaTeX Typesetting for Beginners)

Week 1: Installing and using LaTeX for creating a first LaTeX document. **[1]**: **Chapter 1**.
Week 2: Formatting text and understanding LaTeX commands and environments. [1]: **Chapter 2**.
Week 3: Designing pages, Creating a book with chapters and table of contents. [1]: **Chapter 3**.
Week 4: Creating and customizing lists. [1]: **Chapter 4**.
Week 5: Including images. [1]: **Chapter 5**.
Week 6: Creating tables with captions. [1]: **Chapter 6**.
Week 7: Setting labels and references, Hyperlinks. [1]: **Chapter 7**.
Week 8: Customizing the table of contents, Generating an index, Creating a bibliography. [1]: **Chapter 8**.
Week 9: Writing basic math formulas and equations. [1]: **Chapter 9**.
Week 10: Developing large documents by splitting the input and creating front/back matter. [1]: **Chapter 11**.
Weeks 11, and 12: Transliteration symbols with illustrative examples of the Indian languages, such as Sanskrit, Hindi (Devanagari), Punjabi, and Malayalam. [2]: **Chapter 9**; and **gurmukhi**
Weeks 13, and 14: Creation of transliterated document for typesetting in Devanagari (Sanskrit, Hindi and Marathi), Gurumukhi (Punjabi), and Rachana (Malayalam). [2]: **Chapter 10**; [3]: **Devanagari**, and **Gurmukhi**.
Week 15: ITRANS pre-processor package to convert English-encoded text into various Indian language script such as Gujarati, Bengali, Kannada, Tamil, Telugu, etc. [4]: **Itrans: Indian languages**