Course Code	Course Name	Credits
26PH113	LATEX	04

Course Objectives

- 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

Learning Outcomes

Upon successful completion of this course it is intended that a student will be able 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.

Unit 1 - (12 Hrs.)

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.

Unit 2 – (12 Hrs.)

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

Unit 3 - (12 Hrs.)

Introduction to mathematics environment, writing Greek symbols and some basic mathematics type structure like fractions, superscript, subscript, overline, underline etc. Matrix, determinant and other similar structure. Equations and Arrays. Equation references. Introduction to amsmath package. Various mathematical operation symbols.

Unit 4 – (12 Hrs.)

Inserting pictures and tables. Special environments enumerates, tabular, cases etc. Citation in LaTeX using BibTeX. Creating reference database as .bib file. Bibliography styles.Presentations in LaTeX. Introduction to beamer class. Themes of beamer presentations.

Unit 5 - (12 Hrs.)

LaTeX for chemical structures and formulae, chemfig package. Orbital diagrams. Introduction to tikZ - tool to create graphic elements. Drawing basic shapes in tikZ. Familiarizing Overleaf and different templates. Journal article templates in Overleaf. Creating CVs in LaTeX.

Reference Books:

1. *The LaTeX Companion (3rd Edition)* by Frank Mittelbach et al.
2. *LaTeX Beginner's Guide* by Stefan Kottwitz (practical examples for articles and books).

Websites and eLearning Sources:

1. https://www.youtube.com/watch?v=TG0ubEeBtlI&list=PL_uaeekrhGzKJBJWiiTnAQzMW--mNkVgK

COs and Bloom's Taxonomy Mapping – 26PH113		
Course Outcomes	**On successful completion of this course, students will be able to**	**BTL**
CO1	Recall and describe key physics concepts and laws related to electrical circuits, including Ohm's law, principles of transformers, and electrical safety devices.	K1
CO2	Explain the principles of electrical components, such as capacitors, inductors, and transformers, and their applications in everyday devices.	K2
CO3	Apply Ohm's law and circuit principles to solve real-world problems, such as calculating current, voltage, and resistance in electrical circuits.	K3
CO4	Analyze experimental data from electrical circuits to identify patterns and correlations, such as the effects of resistance and voltage on current flow.	K4
CO5	Evaluate the efficiency and safety of various electrical devices and propose improvements based on design principles and ethical considerations in engineering.	K5, K6

BTL (Bloom's Taxonomy Level) - K1 – Remembering, K2 – Understanding, K3- Applying, K4 – Analyse, K5- Evaluate and K6 - Create

Relationship Matrix – 26PH113													
Course Outcomes	**Programme Outcomes (POs)**						**Programme Specific Outcomes (PSOs)**						**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	
CO1	3	2	1	1	1	1	3	2	1	1	1	1	1.50
CO2	2	2	2	1	1	1	2	3	2	1	1	1	1.58
CO3	2	2	3	2	1	1	2	2	3	2	2	1	1.92
CO4	2	2	2	3	2	1	1	2	2	3	3	1	2.00
CO5	2	3	2	3	3	3	1	2	2	2	3	3	2.33
												Total	1.87

Mean Score: 3- High, 2- Medium/Moderate, 1-Low

FULLY HUMAN
Fully
Alive