Enclosure – X

Generic Elective Courses for PG courses in Mathematics offered by Department of Mathematics

Semester – III		
Course Code	**Course Title**	**Course Credit and hrs**
19PMTGE301	Research Tool: Introduction to LaTeX	Credit-2 and 2hrs/wk

Course Description:
LaTeX is a powerful document description language built on top of TeX. It is available on Unix, Windows and Macintoshes. It can be used for the presentation of plain text (including accented characters and letters outside the English alphabet), the typesetting of mathematical equations, the generation of tables and including graphics. It is particularly suited for the writing of theses, papers and technical documents.

Course Purpose:
LaTeX is an open source document preparation system. It is preferred by academia for technical and scientific document preparation because of its automated and high-quality typesetting features. Our goal is planned to give hands-on training in LaTeX to enhance the document preparation skills of the students.

Course Outcomes: Upon completion of this course, the learner will be able to		
CO No.	**CO Statement**	**Blooms taxonomy Level (K_1 to K_6)**
CO_1	Understand the purpose and nature of LaTeX.	K_1, K_2
CO_2	Understand how LaTeX differs from a word processor.	K_1, K_2
CO_3	Install and utilize LaTeX and its related components successfully on personal computer.	K_2, K_3
CO_4	Create document using LaTeX including the features like line break, fonts size, page breaks.	K_2, K_4
CO_5	Utilize LaTeX and its templates to compose Mathematical	K_2, K_3

	documents, presentations, and reports.	
CO_6	Identify, remember and effectively utilize symbols useful for mathematical type setting.	K_1, K_2, K_3
CO_7	Create complete document including title page, index, chapters, tables graphics and bibliography	K_2, K_4

Course Content **Hours**

12

Module-I : History and Basics of LaTeX.

- History of LaTeX, How to install LaTeX,
- Basic Structure of LaTeX Document, Layout Design,
- Advantages and Disadvantages,
- Input file structures, Document class, Page Style, Packages.

Module-II : Simple documents and type setting 12

- Typesetting of Text, Structure of Document,
- Line Break and Page Break,
- Fonts and Size,
- Different Environments,
- Cross references,
- Footnotes, Fancy header.

Module-III : Mathematical Type Setting 12

- Typesetting Mathematics, single equation,
- Mathematical Formulas, multiline single equation, multiple equations,
- array and matrix, command for mathematical symbols,
- theorem and lemmas.

Module-IV : Use of Graphicx and Tables. 6

- Graphicx package,
- tabular environment,
- bibliography.

Module-V : Presentation using LaTeX. 6

- Preparing presentation using LaTeX.

Suggested laboratory experiments:

- Computer Laboratory

Pedagogic tools:

- Computers
- LCD and Videos.

Text books

- Tobias Oetiker, Hubert Partl, Irene Hyna and Elisabeth Schlegl, The Not So Short Introduction to LaTeX 2ε, www.ctan.org.
- George Grätzer (2007), *More Math into LaTeX*, 4th edition, Springer.
- Michael Doob, *A Gentle Introduction to TeX, www.ctan.org.*
- F. Mittelbach and M Goossens with Braams, Carlisle, and Rowley, *The LaTeX Companion, second edition,* Addison-Wesley Professional, 2004.

Laboratory Manual/ Book

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Suggested reading / E-resources

- www.ctan.org
- https://www.sharelatex.com
- https://tex.stackexchange.com

Suggested MOOCs

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Methods of assessing the Course Outcomes

The COs of the course will be assessed through

M1) CIE-I: Content: Modules I and II
CIE-II: Content: Modules-I to V
(CIE-I+CIE-II: =____ Marks)

M2) Attendance in Classes

M3) Assignments:

- Seminar on topics for the exploration of the content.
- Question answer sessions.

M4) Class Activity:

- Surprise Quiz
- Group discussion

(M2+M3+M4=___ Marks)