

Skill Enhancement Paper

SEC-1: LaTeX and HTML

Total Marks: 100 (Theory: 38, Internal Assessment: 12, and Practical: 50)

Workload: 2 Lectures, 4 Practicals (per week) **Credits:** 4 (2+2)

Duration: 14 Weeks (28 Hrs. Theory + 56 Hrs. Practical) **Examination:** 2 Hrs.

Course Objectives: The purpose of this course is to acquaint students with the latest typesetting skills, which shall enable them to prepare high quality typesetting, beamer presentation and webpages.

Course Learning Outcomes: After studying this course the student will be able to:

- i) Create and typeset a LaTeX document.
- ii) Typeset a mathematical document using LaTeX.
- iii) Learn about pictures and graphics in LaTeX.
- iv) Create beamer presentations.
- v) Create web page using HTML.

Unit 1: Getting Started with LaTeX

Introduction to TeX and LaTeX, Typesetting a simple document, Adding basic information to a document, Environments, Footnotes, Sectioning and displayed material.

Unit 2: Mathematical Typesetting with LaTeX

Accents and symbols, Mathematical typesetting (elementary and advanced): Subscript/Superscript, Fractions, Roots, Ellipsis, Mathematical Symbols, Arrays, Delimiters, Multiline formulas, Spacing and changing style in math mode.

Unit 3: Graphics and Beamer Presentation in LaTeX

Graphics in LaTeX, Simple pictures using PSTricks, Plotting of functions, Beamer presentation.

Unit 4: HTML

HTML basics, Creating simple web pages, Images and links, Design of web pages.

References:

1. Bindner, Donald & Erickson, Martin. (2011). *A Student's Guide to the Study, Practice, and Tools of Modern Mathematics*. CRC Press, Taylor & Francis Group, LLC.
2. Lamport, Leslie (1994). *LaTeX: A Document Preparation System*, User's Guide and Reference Manual (2nd ed.). Pearson Education. Indian Reprint.

Additional Readings:

- i. Dongen, M. R. C. van (2012). *LaTeX and Friends*. Springer-Verlag.
- ii. Robbins, J. N. (2018). *Learning Web Design: A Beginner's Guide to HTML* (5th ed.). O'Reilly Media Inc.

Practical / Lab work to be performed in Computer Lab.

[1] Chapter 9 (Exercises 4 to 10), Chapter 10 (Exercises 1 to 4 and 6 to 9),
Chapter 11 (Exercises 1, 3, 4, and 5), and Chapter 15 (Exercises 5, 6 and 8 to 11).

Teaching Plan (Theory of SEC-1: LaTeX and HTML):

Weeks 1 to 3: Introduction to TeX and LaTeX, Typesetting a simple document, Adding basic information to a document, Environments, Footnotes, Sectioning and displayed material.

[1] Chapter 9 (9.1 to 9.5).

[2] Chapter 2 (2.1 to 2.5).

Weeks 4 to 6: Accents of symbols, Mathematical typesetting (elementary and advanced): Subscript/Superscript, Fractions, Roots, Ellipsis, Mathematical symbols, Arrays, Delimiters, Multiline formulas, Spacing and changing style in math mode.

[1] Chapter 9 (9.6 and 9.7).

[2] Chapter 3 (3.1 to 3.3).

Weeks 7 and 8: Graphics in LaTeX, Simple pictures using PSTricks, Plotting of functions.

[1] Chapter 9 (Section 9.8). Chapter 10 (10.1 to 10.3).

[2] Chapter 7 (7.1 and 7.2).

Weeks 9 and 10: Beamer presentation.

[1] Chapter 11 (Sections 11.1 to 11.4).

Weeks 11 and 12: HTML basics, Creating simple web pages.

[1] Chapter 15 (Sections 15.1 and 15.2).

Weeks 13 and 14: Adding images and links, Design of web pages.

[1] Chapter 15 (Sections 15.3 to 15.5).

Facilitating the Achievement of Course Learning Outcomes

Unit No.	Course Learning Outcomes	Teaching and Learning Activity	Assessment Tasks
1.	Create and typeset a LaTeX document.	(i) Each topic to be explained with illustrations on computers. (ii) Students be given homework/ assignments. (iii) Students be encouraged to create simple webpages.	<ul style="list-style-type: none"> • Presentations and class discussions. • Assignments and class tests. • Mid-term examinations. • End-term examinations.
2.	Typeset a mathematical document using LaTeX.		
3.	Learn about pictures and graphics in LaTeX. Create beamer presentations.		
4.	Create web page using HTML.		

Keywords: LaTeX, Mathematical typesetting, PSTricks, Beamer, HTML.