

SEC syllabus in Physics for Semester III

Paper: SEC III: Scientific Word Processing

Course Objective

This course introduces students to the tools and techniques used for the preparation of scientific and technical documents. Students will learn to use LaTeX, Microsoft Word (with equation editing and referencing tools), and other software for typesetting equations, managing citations, creating figures, and generating professional reports and publications.

Learning Outcomes

- ❖ Understand the principles of scientific document formatting and word processing.
- ❖ Use LaTeX to create professional-grade technical documents.
- ❖ Use Microsoft Word and citation managers effectively for academic writing.
- ❖ Insert and format complex equations, figures, tables, and references.
- ❖ Automate document elements such as tables of contents, lists, cross-references, and bibliographies.
- ❖ Apply best practices in formatting theses, reports, and articles for publication.

Basic Programming and Presentation: Credits: 3 Total Lectures: 90

Module: -1

Scientific Writing with Microsoft Word:

Introduction to the fundamentals of scientific word processing using Microsoft Word. Working with styles and templates, formatting headings and sections, and creating tables of contents, figures, and tables. Use the Equation Editor for writing mathematical expressions and to insert and format citations and bibliographies.

Module: -2 LaTeX for Professional Scientific Documents

Introduction to LaTeX word processor, preparing a basic LaTeX document classes, preparing an input for LaTeX, Compiling LaTeX File, LaTeX tags for creating different environments, Defining LaTeX commands and environments, Changing the type style, Symbols from other languages. Equation representation: Formulae and equations, Figures and other floating bodies, tabular environment, generating table of contents Bibliography and citation, making an index and glossary, List making environments, Fonts, Picture environment, setting-up multiple pictures, drawing basic signs using latex and colours, errors.

Module: -3 Document Preparation for Publication

Development of the skill of delivering scientific presentations using standard software along with Latex.

Resources:

- ✓ Scientific Writing and Communication by Angelika H. Hofmann
- ✓ The Elements of Style by Strunk & White
- ✓ LaTeX A Document Preparation System, Leslie Lamport (Second Edition, Addison-Wesley, 1994).