

SEC syllabus in Physics for Semester I

Paper: SEC I:

Basic Programming and Presentation

Course Objective

- To introduce students to the fundamentals of programming and presentation tools.
- To equip students with the skills to write simple programs and create professional presentations.
- To foster problem-solving and logical thinking through programming.

Learning Outcomes

- ❖ Demonstrate an understanding of programming fundamentals and syntax.
- ❖ Use Python effectively for basic programming tasks.
- ❖ Create visually appealing and well-structured presentations using Microsoft PowerPoint.

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

Module: -1

Introduction to Programming: What is programming? Overview of Compilers, Interpreters, Assemblers, Machine Language, High-Level Language, and Object-Oriented Programming. Introduction to different types of programming languages.

Writing and running the first program ("Hello World")

Understanding basic syntax and its significance.

Module: -2

Python Programming

Importance of Python and reasons for its popularity. Installation of Python and its interpreter.

Variables and Data Types in Python: Integer, Float, String, Boolean. Basic Input and Output operations. Operators, Conditional Statements, and Loops for control flow.

Module: -3

Microsoft PowerPoint:

Overview of Microsoft PowerPoint interface. Creating, saving, and managing presentations. Understanding slides, slide layouts, and components. Adding and formatting text and designing slides. Utilizing slide transitions and animations for enhanced visual effects.

Module: -4

Writing and executing simple Python programs to solve specific tasks.

Creating a complete, professional-quality presentation using Microsoft PowerPoint tools and techniques.

Resources:

- ✓ Scientific computing in python, 2nd Edn, A. K. Gupta, 2021, Techno World.
- ✓ Microsoft PowerPoint 2019 Step by Step" by Joan Lambert.
- ✓ YouTube tutorials on PowerPoint features.

Outline of Proposed Course:

SEC syllabus of Chanchal College in the department of Physics for Semester II

Paper: SEC II: Food Adulteration

For Students Admitted from Academic Year 2024-2025 and Onwards

**Offered by
Department of Physics, Chanchal College**

Course Objectives:

This course aims to equip students with a comprehensive understanding of

- i) basic concepts on various foods and food adulteration
- ii) different types of adulteration and their adverse impact on health
- iii) methods for detecting adulteration of common foods
- iv) taking remedial measures for common food adulterants

Course Outcomes:

Upon successful completion of this course students will be able to

- i) recognize and categorize various adulterants commonly found in food products
- ii) utilize chemical, physical, and sensory analysis methods to identify adulteration in different food items through laboratory experiments and practical assessments.
- iii) assess the potential health risks posed by different types of adulterants
- iv) understand and interpret food safety laws, standards, regulations and procedures regarding consumer protection.
- v) demonstrate an ability to educate others, including consumers and food industry personnel
- vi) evaluate and mitigate the risk of adulteration in food supply chains

Proposed Syllabus

Unit I: Introduction to Food Adulteration:

Definition and Types of Adulteration: Intentional vs. unintentional adulteration, Common adulterants in various food items (spices, dairy, grains, oils, etc.), Poisonous substances, Foreign matter, Cheap substitutes, Spoiled parts. Adulteration through Food Additives, Public health impact and Economic and social consequences.

Unit II: Detection Techniques for Food Adulteration:

Methods of Detection Adulterants in the following Foods; Milk, Coffee, Oil (Ghee), Grain(pulses) , Sugar, Spices (Chili powder, turmeric, coriander) and condiments, Processed food, Fruits and

vegetables. Analysis of additives, sweetening agents, food colour, test enhancer and flavouring agents (e.g Monosodium glutamate, i.e. MSG).

Unit III: Food Safety Regulations and Quality Control:

Basic idea of Food Safety and Standards Act 2006 (FSSA), Food Safety and Standards Authority of India (*fssai*), *fssai* Rules and regulations, Administrative Procedures of Local Authorities. Role and impact of voluntary agencies such as, Agmark, I.S.I. Quality control laboratories of companies, Private testing laboratories, Quality control laboratories of consumer co-operatives. Consumer education, Consumer problems rights and responsibilities, COPRA 2019- Offences and Penalties- Procedures to Complain-Compensation to Victims.

Unit IV: Recommendation on Co-curriculum activities:

Visit to local market and collection of information on adulteration of some common foods, Demonstration of Adulteration detection methods for a minimum of 5 common foods (one method each), demonstrate risk of adulteration in food supply chains, Case Studies and Group Discussions on Public Health Effects, Role of regulatory bodies and law enforcement, Penalties and actions against food adulteration.

Proposed Model of course

Sl. No.	Unit	Unit Title	Modes	Student Activities	Total Hours in a Semester
1	I	Introduction to Food Adulteration	Online and Offline	Lecture: Demonstration	15
2	II	Detection Techniques for Food Adulteration	Offline	Practical: Hands-on-Training	30
3	III	Food Safety Regulations and Quality Control	Online	Tutorial: Presentation, Quizzes	15
4	IV	Recommendation on Co-curriculum activities	Online and Offline	Community Engagement and Seminar: Case Study, Awareness Programme	30

Suggested Text Books and Websites:

1. A first course in Food Analysis, by A.Y. Sathe, New Age International (P)Ltd.,1999
2. Food Adulteration and Safety" Author: H.K. Chopra and P.S. Panesar
3. Food Safety, case studies, by Ramesh.V. Bhat, NIN,1992
4. Food & Beverage Adulteration and Its Implications Theory & Practice, by Gajanan Shirke
5. A text book of food adulteration, by Dr. Vidya Jonallagadda
6. Food Adulteration and Hygiene, by Anupama Rani
7. Prevention of Food Adulteration Act, 1954 & Food Safety and Standards Act, 2006
8. i) https://fssai.gov.in/upload/knowledge_hub/1878035b34b558a3b48DART%20Book by fssai
ii) <https://ugcmoocs.inflibnet.ac.in/assets/uploads/1/123/4257/et/30%20script-Food%20adulteration%20and%20its%20detection200302050503032828> by UGC MOOCs
9. https://old.fssai.gov.in/Portals/0/Pdf/Draft_Manuals/Beverages and confectionary.pdf
10. i) <https://www.fssai.gov.in/>
ii) <https://fssai.gov.in/dart/>
11. <https://indianlegalsolution.com/laws-on-food-adulteration/>
12. Wikiepedia: <https://en.wikipedia.org/wiki/Adulterant>

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.

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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).