

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>