

7th Semester	RAG7D003	Food Quality and Control	L-T-P 3-0-0	3 Credits
--------------------------------	-----------------	---------------------------------	------------------------	------------------

Module I (9 hr)

Basics of Food Science-Food components, basic food categories, nutritional and functional benefits; Basic elements of carbohydrates, fats, protein, vitamin and minerals; Food Analysis-Food analysis and its importance, Subjective and objective analysis, Proximate composition method, Definition of food safety, quality control, quality assurance, quality management, objective of quality control, Quality attributes (intrinsic and extrinsic).

Module II (9 hr)

Product quality standards, total quality management (TQM) and total quality control (TQC); Pareto analysis, check sheets, histograms, scatter diagrams, flowcharts, control charts, fish-bone diagram; Traditional statistical tools, acceptance sampling and statistical process control, measures of central tendencies, curve distribution; Concept of control charts, confidence limits, variability and significance; Sampling purpose and sampling procedures sampling, devices used, advantages and limitations; Sampling for physical and chemical analysis, Sampling for microbial analysis.

Module III (9 hr)

Method for testing quality - Instruments and food quality, UV-vis spectrophotometry, Gas chromatography, Liquid chromatography, Thin layer chromatography, Texture analyser; Measurement of food colour and flavor, consistency, viscosity (kinematic and absolute); Measurement of texture and their relationship with food quality, texture profile analysis for different texture parameters; The importance of sensory evaluation, Taste panel selection criteria, organizing a sensory evaluation system, Classification of different test methods; Discrimination test (triangle, duo-trio & paired test); Descriptive evaluation (5, 7 and 9 point hedonic- advantages and limitations), Affective evaluation, Statistical and graphical analysis of data, inference of the sensory evaluation

Module IV (9 hr)

Food hazard, Hazard characterization, Hurdle technology and prevention of food hazards, Food safety and methods, Different types of hazards (physical, chemical and biological), Source of contamination; Food Safety Management System-Good agricultural practice, Good manufacturing practice, Good hygienic practices, implementation and guidance tools for FSMS; (HACCP) Hazard analysis and critical control point - Seven principles of HACCP, steps of implementation in food industry and Case studies.

Module V (9 hr)

Sanitation in food industry and SOP - Importance of sanitation in food industry, Source of contamination, Sanitizing methods, Cleaners and sanitizers, Cleaning procedure; Sanitation standard operating procedures, personal hygiene, process equipment and environment sanitation pest control, waste disposal; Food Laws and Regulations in India (FSSAI) - Different food laws and regulation in India, Objective & functions of FSSAI, Organisational

structure and mechanism of regulation of FSSAI, Licensing and registration, FSSAI specifications and standards for various commodities and processed products, safe limits for additives; Food Standards- BIS standards and specifications, Codex alimentarius standards, CAC and its objectives and structure, Consumer protection act ; ISO-9000 and ISO-22000series for food quality standards; Traceability, Bio Safety, Bioterrorism- Concept and application of traceability and bio-safety, bio-terrorism.

Books

1. Sharma Avanthi. A text book of Food Science and Technology,2006. CBS Publishers & Distributors
2. Kalia M. 2002. Food Analysis and Quality Control. First Edition. Kalyani Publishers. New Delhi.
3. Dev Raj, Rakesh Sharma and Joshi V.K, Quality for Value Addition in Food Processing.

Reference Books

1. Ranganna S. Hand book of Analysis and Quality Control for Fruit and Vegetable Products.
2. Norman N. Potter and Joseph H. Hotchikss. Food Science. Chapman and Hall Pub.
3. Acharya, K T Everyday Indian Processed foods. National Book Trust.
4. Mudambi Sumati R., Shalini M. Rao and M V Rajgopal. Food Science. New Age International Publishers.
5. Negi H.P.S., Savita Sharma, K. S. Sekhon. Hand book of Cereal technology. Kalyani Publication.
6. Srivastava R.P. Kumar Sanjeev. Fruit and Vegetable Preservation: Principles and Practices. International Book Distributing Company
7. The Food Safety and Standards Act along with Rules & Regulations. Commercial Law Publishers (India) Pvt. Ltd.
8. Harry T. Lawless · Hildegard Heymann. 2010. Sensory Evaluation of Food: Principles and practices Second Edition. Springer New York

Digital Learning Resources:

www.fssai.gov.in; <http://www.iso.org> ;
<http://www.codexalimentarius.net>; www.fda.gov