



**TEERTHANKER MAHAVEER UNIVERSITY
COLLEGE OF AGRICULTURE SCIENCES**

OPEN ELECTIVE COURSES

Under

Choice Based Credit System

[w.e.f. 2020-21]



Food Safety and Standards

Course Type	Course Code	L T P C
Discipline Specific Elective Course	OEAGR101	2 0 0 2

Course Outcomes (COs).

On completion of the course the students will be

CO – 1	Understanding the basic concepts of food safety management.
CO – 2	Applying effective storage and hygienic methods to control the contamination.

Unit 1

(4 Hours)

Food Safety – Definition, Importance, Scope and Factors affecting Food Safety. Hazards and Risks, Types of hazards - Biological, Chemical, Physical hazards. Management of hazards - Need. Control of parameters. Temperature control.

Unit 2

(4 Hours)

Food storage. Product design. Hygiene and Sanitation in Food Service Establishments- Introduction. Sources of contamination and their control. Waste Disposal.

Unit 3

(4 Hours)

Pest and Rodent Control. Personnel Hygiene. Food Safety Measures. Food Safety Management Tools- Basic concepts. PRPs, GHPs, GMPs, SSOPs etc. HACCP.

Unit 4

(4 Hours)

ISO series. TQM - concept and need for quality, components of TQM, Kaizen. Risk Analysis. Accreditation and Auditing, Water Analysis, Surface Sanitation and Personal Hygiene.

Food laws and Standards- Indian Food Regulatory Regime, FSSA. Global Scenario CAC. Other laws and standards related to food.

Unit 5

(4 Hours)

Recent concerns- New and Emerging Pathogens. Packaging, Product labeling and Nutritional labeling. Genetically modified foods\ transgenics. Organic foods. Newer approaches to food safety. Recent Outbreaks. Indian and International Standards for food products.

Text books:

1. Food Safety Management: Implementing a Food Safety Program in a Food Retail Business, King, Hal, Springer-Verlag New York

Reference books:

1. A Practical Guide to Food Laws and Regulations, Kiron Prabhakar, Bloomsbury Publishing
2. Food Processing: Recent Developments, Anilkumar G. Gaonkar Elsevier,
3. Fundamentals of Food Process Engineering, Romeo T. Toledo Springer Science & Business Media.
4. Food Technology an introduction, Anita Tull, Oxford University Press

Food Safety and Standards Practical

Course Type	Course Code	L T P C
Discipline Specific Elective Course	OEAGR102	0 0 2 1

The Course Outcomes (COs)

On completion of the course the students will be

CO-1	Understanding the various methods and techniques for the microbial and chemical assessment of fresh / processed food
CO-2	Applying different methodologies and regulation for implementing HACCP, FSMS to ensure food safety

1. Water quality analysis physico-chemical and microbiological.
2. Preparation of different types of media.
3. Microbiological Examination of different food samples.
4. Assessment of surface sanitation by swab/rinse method.
5. Assessment of personal hygiene.
6. Biochemical tests for identification of bacteria.
7. Scheme for the detection of food borne pathogens. ‘
8. Preparation of plans for Implementation of FSMS - HACCP, ISO: 22000.

Evaluation of Practical Examination:

Internal Evaluation (50 marks)

Each experiment would be evaluated by the faculty concerned on the date of the experiment on a 3 point scale which would include the practical conducted by the students and a viva taken by the faculty concerned. The marks shall be entered on the index sheet of the practical file.

Practical Performance during the semester 35 marks				On the day of exam 15 marks		
Experiment	File work	Viva	Attendance	Experiment	Viva	Total internal marks 50
05 marks	10 marks	10 marks	10 marks	5 marks	10 marks	

External Evaluation (50 marks)

The external evaluation would also be done by the external examiner based on the experiment conducted during the examination.

Experiment	File Works	Viva	Total External
30 marks	10 marks	10 marks	50 marks



Agricultural Heritage

Course Type	Course Code	L	T	P	C
Core Course	BAG 113	1	0	0	1

The Course outcomes (COs).

On completion of the course the students will be

CO – 1	Understanding the principles, theories, practices and status of ancient and modern Indian agricultural systems.
CO – 2	Applying various traditional methods and techniques for plant production and protection in present day agriculture system.
CO – 3	Analyzing the effect of indigenous traditional knowledge on the development of modern agriculture system.
CO – 4	Evaluating the different ancient methodologies and techniques adopted for the development of Indian agriculture system.

Unit-I

(4Hours)

Introduction of Indian agricultural heritage; Ancient agricultural practices, Relevance of heritage to present day agriculture;

Unit-II

(4Hours)

Past and present status of agriculture and farmers in society; Journey of Indian agriculture and its development from past to modern era;

Unit-III

(4Hours)

Plant production and protection through indigenous traditional knowledge; Crop voyage in India and world;

Unit-IV

(4Hours)

Agriculture scope; Importance of agriculture and agricultural resources available in India; Crop significance and classifications;

Unit-V

(4Hours)

National agriculture setup in India; Current scenario of Indian agriculture; Indian agricultural concerns and future prospects.