

## **Department of Food Science and Technology**

**Shivaji University, Kolhapur**

### **A Course under Choice Based Credit System (CBCS)**

(Following points (minimum) should be covered while designing the CBCS course)

- **Course code:**
- **Title of the course:** Principles of food Processing and Preservation
- **Department at which course will be conducted :** Department of Food Science and Technology
- **Duration :** 15 week
- **Contact Sessions :** **Theory:** 60 hours and **Practical:** NIL
- **Credits : 04**
- **Course Coordinator/Instructor :** Dr. A. K. Sahoo
- **Eligibility :**
  - A) Candidate possessing B.Sc. Degree from Shivaji University with minimum 50%marks. Bachelor degree from Shivaji University in Food Science and technology, Food Science and Quality control, Food Technology and Management, Agriculture, Horticulture and Home Science with minimum 50% marks. Students from other universities with B.Sc. degree in general, Agriculture and Horticulture with minimum 50% marks. B.Sc. Microbiology, Biotechnology, Chemistry, Zoology.
- **Intake : Min: ( 10 )            Max : ( 20 )**
- **Course offered during :** Odd Semester
- **Course Fee:** Rs.2000/- per student
- **Course contents :** Unit1/ Unit2/ Unit3/ Unit4
- **Examination :** 80 marks ( External Examination) + 20 Marks ( Internal Exam)
- **Text Books/ Reference Books :**
  - Arsdel W.B., Copley, M.J. and Morgen, A.I. 1973. Food Dehydration, 2nd Edn. (2 vol. Set). AVI, Westport.
  - Bender, A.E. 1978. Food Processing and Nutrition. Academic Press, London.
  - Fellows, P. and Ellis H. 1990. Food Processing Technology: Principles and Practice, New York.
  - Jelen, P. 1985. Introduction to Food Processing. Prentice Hall, Reston Virginia, USA.
  - Lewis, M.J. 1990. Physical Properties of Food and Food Processing Systems. Woodhead, UK.

Willey, R.C. Ed. 1994. Minimally Processed Refrigerated Fruits and Vegetables. Chapman and Hall, London.

- **Any other information, if any .**

This Course deals with preservation aspects of food which is beneficial for the students who intended to work in food preservation. It is also beneficial to Microbiology, Biochemistry, Chemistry students.

## Department of Food Science and Technology

Shivaji University, Kolhapur

### A Course under Choice Based Credit System (CBCS)

(Following points (minimum) should be covered while designing the CBCS course)

- **Course code:**
- **Title of the course:** Fermentation Technology
- **Department at which course will be conducted :** Department of Food Science and Technology
- **Duration :** 15 week
- **Contact Sessions : Theory:** 60 hours and **Practical:** NIL
- **Credits : 04**
- **Course Coordinator/Instructor :** Dr. A.K.Sahoo
- **Eligibility :**
  - B) A) Candidate possessing B.Sc. Degree from Shivaji University with minimum 50% marks. Bachelor degree from Shivaji University in Food Science and technology, Food Science and Quality control, Food Technology and Management, Agriculture, Horticulture and Home Science with minimum 50% marks. Students from other universities with B.Sc. degree in general, Agriculture and Horticulture with minimum 50% marks. B.Sc. Microbiology, Biotechnology, Chemistry, Zoology.
- **Intake : Min: ( 10 )            Max : ( 20 )**
- **Course offered during :** Odd Semester
- **Course Fee:** Rs.2000/- per student
- **Course contents :** Unit1/ Unit2/ Unit3/ Unit4
- **Examination :** 80 marks ( External Examination) + 20 Marks ( Internal Exam)
- **Text Books/ Reference Books**
  - Stanburry P.P. and Whitaker, A. 1984. Principles of Fermentation Technology. Pergamon Press, Oxford UK.
  - Steinkraus, K.H. 1983. Handbook of Indigenous Fermented Foods. Marcel Dekker, New York.
- **Any other information, if any.**
  - This course is beneficial to B.Sc. (Microbiology, Biochemistry, Biotechnology) students.

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## **COURSE CONTENT**

FST 101: Principles of food processing and preservation (4 credits, 60 lectures)

Unit-1 (1 credit, 15 lectures)

Scope and importance of food processing: national and international perspectives, Principles of Preservation methods, fermentation methods for preservation, and chemical preservations of foods.

Unit-2 (1 credit, 15 lectures )

Food preservation by low-temp: Refrigeration, freezing and freeze-drying.

Unit-3 (1 credit, 15 lectures)

Food preservation by heating: drying, osmotic dehydration, blanching, canning, pasteurization, sterilization, extrusion cooking.

Unit-4 (1 credit, 15lectures)

Non-thermal preservation: Hydrostatic pressure, dielectric heating, microwave processing, hurdle technology, membrane technology, irradiation.

### **Suggested Readings**

Arsdel W.B., Copley, M.J. and Morgen, A.I. 1973. Food Dehydration, 2nd Edn. (2 vol. Set). AVI, Westport.

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Fellows, P. and Ellis H. 1990. Food Processing Technology: Principles and Practice, New York.

Jelen, P. 1985. Introduction to Food Processing. Prentice Hall, Reston Virginia, USA. Lewis, M.J. 1990. Physical Properties of Food and Food Processing Systems. Woodhead, UK.

Willey, R.C. Ed. 1994. Minimally Processed Refrigerated Fruits and Vegetables. Chapman and Hall, London.

FST 204 Fermentation technology (4 credits, 60 lectures)

Unit-1 (1 credits, 15 lectures)

Introduction to fermentation: Rate of microbial growth and death. Fermentation kinetics, Types of fermentation sub-merged/solid state, Batch /continuous fermentation.

Unit-2 (1 credits, 15 lectures)

Fermenter design, operation, measurement and control in fermentation, Aeration and agitation in fermentation: Oxygen requirement, measurement of adsorption coefficients, sterilization of air and media; scale up in fermentation.

Unit - 3 (1 credits, 15 lectures)

Production of beer, wine and vinegar, Traditional fermented foods like idli and dosa. Principles of down stream processing and Product recovery.

Unit -4 (1 credits, 15 lectures)

Production of alcohols, organic acids, enzymes and immobilization of enzymes. Biological waste treatment

#### Suggested Readings

Stanburry P.P. and Whitaker, A. 1984. Principles of Fermentation Technology. Pergamon Press, Oxford UK.

Steinkraus, K.H. 1983. Handbook of Indigenous Fermented Foods. Marcel Dekker, New York.