

Subject Code: 01CH0705
Subject Name: Food Technology
B.Tech. Year: IV (Semester VII)

Objective: Food processing has moved on from being a craft to a modern technology. This course aims to cover principles of operation and design of industrial equipment, used in the processing, storage and packaging of foods. Food quality and food safety aspects, related to food processing equipment, are emphasized

Credits Earned: 3 Credits

Course Outcomes: After completion of this course, student will be able to:

- to understand general processing flow for various food products, physical principles of operation for various types of equipment
- impact of the processing on the physical, chemical and sensory properties of the food products
- compare results from own studies with results from other natural science and social science studies.
- select the food processing method most suitable for specific application

Pre-requisite of course: Unit operations

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	CSE	Internal (I)	Viva (V)	Term work (TW)	
3	0	0	3	50	20	30	25	25	150

Contents:

Unit	Topics	Contact Hours
1	GENERAL PRINCIPLES OF MANUFACTURING PROCESS Manufacturing processes: batch, Semi-batch and continuous, Mass-balance calculations	6
2	NON-CONVERSION OPERATIONS Food raw materials: physical, functional and geometric properties, Cleaning of raw materials: cleaning methods and contaminations, Sorting and grading of foods: weight, size, shape, buoyancy, photometry sorting.	8

3	FOOD CONVERSION OPERATIONS Size reduction and screening of solids: equipment, modes of operation. Disintegration of materials: slicing, dicing, shredding, pulping, Mixing and emulsification, Filtration and membrane separation: principles, design features and general applications, Centrifugation: principles and applications, Solid-liquid extraction and expression, Heat processing (Part 1): modes of heat transfer, Methods of applying heat to food.	8
4	PRESERVATION OPERATIONS Heat processing (Part 2): microbiological considerations. Methods of heat sterilization in containers. Pasteurization by heat processing, Non-thermal processing and Hurdle technologies, Evaporation: evaporation principles and equipment, Dehydration: water in food, drying (contact, radiation, sublimation), Freezing: freezing/thawing	8
5	FOOD STORAGE Food storage: storage conditions and packaging (materials, filing, closing and sealing equipment).	8
Total Hours		38

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	20%	25%	25%	20%	-

Instructional Method:

- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Web Links:

- a. <https://unaab.edu.ng/food-science-and-technology-lecture-notes/>
- b. <https://www.aiche.org/community/students/career-resources-k-12-students-parents/what-do-chemical-engineers-do/enhancing-food-production>
- c. <https://www.longdom.org/scholarly/chemical-engineering-in-food-industry-journals-articles-ppts-list-1711.html>

Design Based Problems (DP)/ Open Ended project (OEP):

In the beginning of the session, subject faculty will allot an OEP / DP to the students. Students will be free to choose a topic of their choice which will be relevant to the syllabus and they will either prepare a working model/ report / presentation / poster on their topic.