



# FUNDAMENTALS OF FOOD PROCESS ENGINEERING

## **PROF. JAYEETA MITRA**

Department of Agricultural and Food Engineering  
IIT Kharagpur

**INTENDED AUDIENCE :** Agricultural Engineering, Dairy Process Engineering, Food Process Engineering

**INDUSTRIES APPLICABLE TO :** Any Industry deals with food processing such as Hindustan Lever, ITC, Britannia, PepsiCo, Amul etc.

## **COURSE OUTLINE :**

Food Process engineering has become an important branch of applied engineering. Since post harvest processing is gaining impetus in our country, concepts of basic food structures and their processing are essential. Enormity of foods with their diverse as well as specific unique characteristics demands special processing treatments. At the same time being biological commodities, their processing needs to meet the safety requirements as well. This course has been designed to impart the fundamental concepts of Food rheology, as well as thermal/non-thermal processing of foods. Drying being the most common technique followed for food preservation, a detailed discussion on drying has been incorporated. Food freezing has been covered and finally few important unit operations of food engineering are discussed. A glimpse of non-thermal processing (High pressure processing, Pulsed electric field etc.) has also been included in the courses.

## **ABOUT INSTRUCTOR :**

Prof. Jayeeta Mitra is working as Assistant Professor in AGFE Dept., IIT Kharagpur Since 2014. Prior to this, she has worked as Assistant Professor in Centre of Food Science and Technology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi and Food Process Engineering Department, National Institute of Technology Rourkela. She has studied B Tech in Agril. Engg from BCKV, Mohanpur; Masters in Process and Food Engineering Pantnagar, Uttarakhand and obtained her Ph.D from IIT Kharagpur. She has worked in drying for few years. She is currently working on Food Processing, Packaging and storage. She is member of AFST (I), ISAE and ASABE. She is the Associate Editor of the Journal JPTR, Springer.

## **COURSE PLAN :**

- Week 01 :** Concept of Food Rheology and its Measurements
- Week 02 :** Viscoelastic foods
- Week 03 :** Thermal processing and microbial death kinetics
- Week 04 :** Evaporation and concentration
- Week 05 :** Heat Exchangers
- Week 06 :** Drying Technology
- Week 07 :** Freezing and Freeze Drying
- Week 08 :** Size Reduction
- Week 09 :** Separation Techniques
- Week 10 :** Mixing and agitation
- Week 11 :** Leaching and Extraction
- Week 12 :** Non Thermal Processing