

## **FST-201, Technology of Fats and Oils 3 (2-1)**

### **Educational objectives:**

The course is aimed to provide the students the concepts related to lipids in foods and their importance in fats and oil industry and food industry in general. The course helps student understand the processing and quality control parameters of fats and oils in food industry.

### **Course outcomes:**

1. Understand the concepts of lipids and their importance in foods
2. Acquire the knowledge on fats and oil processing.
3. Analyse the basic issues in fats and oil extraction and processing
4. Application of oil processing knowledge in food industry

### **Course contents:**

- Introduction
- history of triglyceride analysis
- Triglyceride types
- Nomenclature and possible applications
- Edible oils and fats, natural sources
- Oil extraction: Rendering process
- Mechanical expression, solvent extraction
- Production of hydrogenated oils: Refining
- Bleaching hydrogenation and deodorization operations
- Fat and Oils analysis: Isolation and fatty acid analysis (Methyl ester preparation, column, identification of peaks, quantization)
- Silver ion adsorption chromatography
- TLC, Column chromatography and application
- GLC, Fractional crystallization
- Specifications of vegetable ghee
- Production of salad and cooking oils, margarine, butter, food dressings, toppings, coatings and shortenings
- Production and characterization of specialty oils
- Quality control in oils and fats processing

### **Practical:**

- Oil extraction, refining, bleaching, hydrogenation and deodorization. isolation of triglycerides by column chromatography, Florisil/ salicylic acids, TLC.
- Fatty acid analysis by GLC, Methyl ester preparation.
- Catalytic hydrogenation, permagnate oxidation, ozonization, epoxidation, bromination etc. Silver ion adsorption chromatography.
- Preparation of different fat products: butter, margarine, dressings, toppings etc.
- Visits to various oil processing plants and quality control laboratories.

### **Recommended Books:**

1. Hamm, W., Hamilton, R.J. and Calliauw, G. 2013. Edible oil processing. 2<sup>nd</sup> Edition. Wiley-Blackwell, USA.
2. Talbot, Geoff. 2015. Specialty oils and fats in food and nutrition: properties, processing and applications. Wood Head Publishing, Elsevier.