

FST-212, Cereal Technology 3 (2-1)

Educational Objectives:

The course will focus on making students understand the basics of cereal science, get familiar with different cereals locally produced, the nutritional value of cereals and the importance of cereals for Pakistani population. The complete flour making procedures are integral part of this course.

Course Outcomes:

1. To familiarize the students about the importance of cereals for our daily diet
2. To know about the nutritional value of different cereals
3. To know the milling processes of different cereals
4. To develop practical skills in determining the composition of cereals
5. To elaborate the complete flour making process and use of cereals in different product manufacturing.

Course Contents:

- Cereal grains: Importance, production, structure, composition, grades and grading.
- Cereal industry: status, recent trends and technologies.
- Storage of cereals: role of moisture, storage methods and types, functional changes.
- Cereal: starches, proteins and minor constituents.
- Dry milling of wheat: process (tempering, grinding and sifting), different products, flour treatment, flour fortification and flour quality assessment.
- Wet milling of maize: principle, methods and production of starch, oil and protein. Rice: quality indicators, drying, milling and processing.
- Parboiling of rice: methods and advantages. Rice noodles, quick-cooking rice, canned and frozen rice, extruded rice, shredded rice.
- Barley processing: malt production and uses. Leavened products: bread recipes and processing methods. Soft wheat products.
- Durum wheat products: pasta, noodles. Breakfast cereals: Introduction, the industry and its structure.

Practical:

- Grading of grains, tempering and milling of wheat.
- Physical and chemical methods for flour and grain quality assessment.

- Preparation of vermicelli, bread, biscuits and cakes etc.
- Visit to relevant industry.

Recommended Books:

1. Karuppasamy Packiyam, 2020, Textbook on Bakery science and technology: baker is maker, Schoalrs Press
2. Weibiao Zhou, Y. H. Hui, 2014, Bakery products science and technology, Wiley Blackwell.
3. Abecassis, Joël; Carcea, Marina; Marchylo, Brian; Sissons, Mike, Durum wheat: chemistry and technology, 2012, American Association of cereal chemists.
4. Elke K. Arendt, Emanuele Zannini, 2012, Cereal grains for the food and beverage industries, Woodhead publishing
5. Serna-Saldivar, S.O. 2012. Creal grains: laboratory reference and procedures manual (food preservation technology). CRC Press, Taylor & Francis Group, Boca Raton, Florida, USA.