4272 - CEREAL TECHNOLOGY

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
3	2	5	25	25	3 Hrs	100	-	150

Pre-requisite	Source
Nil	FOD

Semester	Theory	Test	Total	TW	PR	Gr Total
	75	25	100	50	-	150

Rationale: The field of technology includes a number of process technologies. Cereal Technology constitutes a very important area of food technology covering a large group of food processing industries such as bakery and related industries. The syllabus in this subject aims at providing the student with necessary knowledge of the basic principles and procedures in the production of important bakery and other cereal product. Theory classes are substantiated with practical work to impart knowledge and skills in the production and quality control of cereal products.

COURSE CONTENTS	Hrs	Mks
1. INTRODUCTION Main cereal crops grown in the country. Importance of cereals as food commodity.	2	5
2. TECHNOLOGY OF RICE Important groups of cultivated rice and their regional distribution, Structure and composition of rice grain, Distribution of nutrients in rice grain, Mechanical drying of harvested paddy, drying and milling quality of rice. Parboiling of paddy: Definition. Traditional methods of parboiling. Modern method of parboiling- C.F.T.R.I. process, advantages of parboiling of paddy. Physio-chemical properties of rice: Comparison of gelatinisation temperature, cooking quality and loss of nutrients in cooking water of raw and parboiled rice. Curing of rice- Cooking quality of new and old rice, method of curing rice. Milling of rice- moisture content of rice for optimum milling quality, cleaning procedure of rice prior to milling and equipment used in cleaning, modern milling process of rice and equipment used in cleaning, evaluation of quality in milled rice, effect of milling on quality of rice, by-products of rice milling (uses only) rice products- Production of canned rice, production of enriched rice, production of instant mixes from rice- idli mix, dosa mix, etc., rice based infant food.	15	25

3. TECHNOLOGY OF WHEAT PRODUCTS		
Main groups of cultivated wheat and their regional distribution (spring wheat and winter wheat). Important varieties of wheat grown in the country.	2	5
Structure and composition of wheat grain: Distribution of nutrients in wheat grain. Milling of wheat: Comparison of milling quality of hard and soft wheat, cleaning procedures of wheat milling, modern process of wheat milling, products of wheat milling and their uses.	4	6
Baking technology: Ingredients used in baking of bread, quality requirements of flour in baking of bread, laboratory tests for evaluating quality of wheat flour for baking, role of various ingredients in baking of bread, commercial methods of baking of bread: Straight dough method, sponge and dough method, continuous bread making process (Do maker, Am Flow methods), equipment used in bread productions, common defects (appearance and texture in bread and a remedial measures), production of enriched bread, spoilage of bread and measures to prevent spoilage.	7	15
Biscuit production: Quality requirements of flour in biscuit production, role of various ingredients in biscuit production, process and equipment used in production of biscuit, common defects (appearance and texture) in biscuit and remedial measure.	4	8
Production of cake: Ingredients used in production of plain sponge cake, role of various ingredients in production of cake, process of production of plain sponge cake, equipment used in production of cake.	3	8
Production of pasta goods: Various types of pasta products (noodles, spaghetti, macaroni and vermicelli), requirements of wheat flour for production of pasta products, ingredients used in production of pasta products, process and equipment used in production of pasta products, quality evaluation of pasta products.	4	8
4. PRODUCTION OF BREAKFAST FOODS	4	12
Process of manufacture of puffed and flaked products from maize and rice.		
5. MALTING OF CEREALS	3	8
Process of production of malted wheat flour, Uses of malted cereal flour.		
Total	48	100

PRACTICALS

1) Study of hydration characteristics of raw and parboiled rice: At constant temperature, with increasing temperature.
2) Parboiling of paddy.
3) Visit to rice mill.
4) Tests for evaluating baking quality of wheat flour: Moisture content, ash content, gluten content, sedimentation value, alcoholic acidity, maltose figure, water absorption power of flour.
5) Determination of dough raising capacity of yeast
6) Test baking.
7) Production of bread and quality evaluation
8) Production of biscuit and quality evaluation
9) Baking of cake and quality evaluation
10) Visit to biscuit factory
11) Visit to roller flour mill

REFERENCE BOOKS

1. Baking Technology and Engineering by Matz
2. Cereal Technology by Matz
3. Bread Science and Technology by Pomeranz and Shellenberger.
4. Cookie and Cracker Technology by Matz
5. Food Science by Potter