

GUJARAT TECHNOLOGICAL UNIVERSITY

FOOD PROCESSING & TECHNOLOGY (14) BAKERY AND CONFECTIONARY TECHNOLOGY SUBJECT CODE: 2161409 B.E. 6th SEMESTER

Type of course: Food Processing Technology

Prerequisite: Nil

Rationale:

This course will acquaint the students regarding the preparation of various bakery, sugar and chocolate confectionary products, their quality control, control of processing parameters and handling of equipments, which is essential for the students to perform efficiently and effectively in the industry

Teaching and Examination Scheme:

| Teaching Scheme | | | Credits C | Examination Marks | | | | | | Total Marks |
|-----------------|---|---|--------------|-------------------|--------|-----|-----------------|----|-----------|----------------|
| L | T | P | | Theory Marks | | | Practical Marks | | | |
| | | | | ESE (E) | PA (M) | | ESE (V) | | PA (I) | |
| | | | | PA | ALA | ESE | OEP | | | |
| 4 | 0 | 2 | 6 | 70 | 20 | 10 | 20 | 10 | 20 | 150 |

Content:

| Sr. No. | Content | Total Hrs | % Weightage |
|----------|---|-----------|-------------|
| 1 | Materials for Baking: Wheat varieties, wheat milling, by products of wheat milling, desirable qualities of white wheat flour, grades of white wheat flour, Yeast, leaveners and shortenings, Types of yeast, properties, leavening agents their role and types, role of shortening and forms used in bakery, Emulsifiers and antioxidants, sweeteners and malt syrup, Role of emulsifiers and antioxidants and their types, kinds of sweeteners used in bakery, Methods of manufacture of syrups and their properties, Ingredients from milk and eggs: Introduction, role and types, Other ingredients: Vegetables and nuts, spices, flavours and colours. | 15 | 20 |
| 2 | Bread Formulation and Processing: Ingredients, details of manufacturing steps like fermentation, proofing, baking, packing, Defects in bread: Details of different defects like physical, microbiological etc, their causes and prevention. | 6 | 22 |
| 3 | Cake Formulation and Processing: Ingredients, details of manufacturing steps, types of cakes, defects-their causes and prevention. | 5 | 18 |
| 4 | Products Leavened with Chemicals: Introduction method of manufacture of biscuit, types of biscuit and manufacturing details of cookies and crackers. | 5 | 15 |
| 5 | Chocolate Confectionery: Cocoa processing, details of confectionery manufacture. | 4 | 15 |
| 6 | Sugar Confectionery: Introduction of raw materials like cane sugar, liquid glucose etc, classification of sugar confectionery, Processing of Hard boiled candy | 6 | 10 |

Suggested Specification table with Marks (Theory):

| Distribution of Theory Marks | | | | | |
|------------------------------|---------|---------|---------|---------|---------|
| R Level | U Level | A Level | N Level | E Level | C Level |
| 19 | 18 | 20 | 21 | 22 | 0 |

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Bakery Technology and Engineering: Samual Matz
2. Bakery Science and Cereal technology: N. Khatarpaul, Grewal, Jood
3. Baking: Science and Industry: K.B. Kamaliya
4. Industrial Chocolate Manufacture: S.T. Beckett
5. Sugar Confectionery: Jackson and Lees

Course Outcome:

At the end of this module, the student will be able to:

- a. Understand the importance and role of various ingredients used in bakery and confectionary products.
- b. Understand the different methods of bread & cake making and their formulations.
- c. Understand the different types of biscuits, cookies and their methods of manufacturing.
- d. Understand the process of cocoa processing and chocolate manufacturing.
- e. Understand the different types of sugar confectionary products and their process.

List of Experiments:

1. Introduction to bakery equipments
2. Determination of ash content of the given sample of white wheat flour
3. Estimation of water absorption power and gluten content of the given flour.
4. Determination of alcoholic acidity of the given sample of wheat flour.
5. Determination of sedimentation value of white wheat flour
6. Determination of yeast quality by its dough rising capacity
7. Preparation of plain biscuit in laboratory
8. Preparation of egg less cake.
9. Preparation of bread by straight dough method
10. Preparation of brown bread

Design based Problems (DP)/Open Ended Problem:

The topics taught in this subject would be useful to develop insight and application based knowledge among students

To know the different ingredients, their quality and selection criteria. To know the role of different ingredients in the various bakery and confectionary products. How to prepare and judge the quality of bread, biscuit, cake and nankhatai. How to judge the quality of sugar and chocolate confectionary products

Major Equipments & Instruments:

- a. Baking oven
- b. SS working table
- c. Dough kneader

- d. Baking trays
- e. Baking pans
- f. Bakery moulds
- g. Rolling pins
- h. Dough sheeter
- i. Dough cutter
- j. Dough rounder
- k. Cooling racks
- l. Slicer
- m. Sealing machine
- n.

List of Open Source Software/learning website: <http://foodscience.uark.edu/>

- a. www.cftri.com/milling.html
- b. www.nchm.gov.in/nchmct_adm/writereaddata/.../1386722436.pdf
- c. www.bakerybazar.com/2010/05/process-flow-chart-for-bread.html
- d. npcs.in/.../confectionery-products...chocolate...sugar...confectionery/.../index.html

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.