

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-10 –FT:  
SUGAR AND CONFECTIONERY TECHNOLOGY**

**CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE**

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Sugar and Confectionery Technology	4	3	0	1	Class XII	Nil

**LEARNING OBJECTIVES:**

- To equip the students with scientific base for preparing and conducting quality analysis of different types of confectionary products
- Facilitate student to explore the technologies involved in the production of confectionery products.
- Help student gain insights into the industry's growth, technological advancements and emerging trends that are shaping its future.

**LEARNING OUTCOMES:**

After completion of the course, the students will be able to:

- Know the current status of sugar and confectionery industry in India.
- Attain knowledge of the standards and regulations.
- Understand the principles of sugar cookery
- Understand the technologies for confectionery product preparations.

**SYLLABUS OF DSE:10-FT**

**THEORY**

**(Credits: 3; Hours: 45)**

**UNIT I: Introduction**

**(6 Hours)**

Unit Description: This unit covers the history and current status of sugar processing in India, the economic significance of the confectionery industry, and the classification of confectionery products alongside relevant food safety standards and regulations.

*Subtopics:*

- History and current status of sugar processing in India
- Economic importance of Confectionery Industry in India.
- Confectionery products - types and their relevant standards and regulations.

**UNIT II: Sugars**

**(12 Hours)**

Unit Description: This unit explores the chemistry of sugar, its various types and sources and the processing methodologies for different kinds of sugars. It also examines the refining processes and technologies used at each stage.

*Subtopics:*

- Chemistry of sugar
- Types and sources
- Methodology of processing of different kinds of sugars (raw, khandsari, brown, bura, rock, jaggery)
- Methodology of refining the sugar.

**UNIT III: Sugar Cookery****(12 Hours)**

Unit Description: This unit focuses on the principles of sugar cookery. It examines the impact of heat, acids and other additives on sugar behaviour. This unit also covers the methodology for preparing liquid sweeteners and syrups, along with an exploration of different types of candies.

*Subtopics:*

- Principles of sugar cookery (inversion, melting, caramelization, crystallization and hydrolysis)
- Role of heat, acid and other ingredients on sugar behaviour
- Methodology of preparation of liquid sweeteners/ syrup
- Types of candies: crystalline and non-crystalline

**UNIT IV: Confectionery Products****(15 Hours)**

Unit Description: This unit covers confectionery additives, production processes, quality parameters, and troubleshooting for various confectionery items like candies, toffees, caramels and traditional Indian sweets. It also includes the preparation of cake icings, required ingredients, equipment and corrective measures for common faults.

*Subtopics:*

- Confectionery additives
- Hard-boiled candies, toffees, jujubes, caramel, fondant, fudge and brittles: ingredients, processes, product quality parameters, faults and corrective measures.
- Indian confectionery items like chenna-murki, shakarpara etc: ingredients, processes, product quality parameters, faults and corrective measures.
- Cake icing: preparation of different icings, ingredients, equipments required, faults and corrective measures.
- Chocolate: ingredients, processing, fat bloom

**PRACTICAL****(Credit: 1; Hours: 30)**

*No. of Students per Practical Class Group: 10-15*

1. Estimation of solubility, moisture and ash content of sugar and jaggery.
2. Determine the effect of various thermal temperatures on sugar solution and perform the thread and ball test.
3. To study the process of inversion, melting, caramelization and crystallization in sugar.
  - Preparation and quality evaluation of
    - Shakarpara
    - Chena-murki
    - Fondant
    - Fudge
    - Brittles
    - Hard boiled candy
    - Toffee
    - Fruit candy
    - Caramel syrup and chocolate sauce

- Butter scotch
4. Decoration/ frosting of cake with royal icing/ butter cream icing

### ESSENTIAL/ RECOMMENDED READINGS (Theory and Practical):

- Manay, S. and Shadaksharaswami, M. (2004). Foods: Facts and Principles. New Age Publishers.
- Marion Bennion, Barbara Scheule. (2016). Introductory foods, 13th edition. Pearson, Kent State University.
- Mohini, Sethi. & Eram, Rao. (2011). Food science- Experiments and applications, 2<sup>nd</sup> ed., CBS publishers & Distributors Pvt Ltd.
- Raina et.al. (2003). Basic Food Preparation-A complete Manual. 3rd Ed. Orient Longman Pvt. Ltd.
- Minifie, B.W. (1999). *Chocolate, Cocoa and Confectionary*. Aspen Publication.

### SUGGESTED READINGS:

- Edwards, William. P. (2000). The Science of Sugar Confectionery, The Royal society of Chemistry
- Lees, R. (2012). *Sugar confectionery and chocolate manufacture*. Springer Science & Business Media.
- Lees, R. & Jackson, EB. (1992). *Sugar Confectionery and Chocolate Manufacture*. Springer.

**Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi.**

## DISCIPLINESPECIFIC ELECTIVE COURSE–DSE-12-FT: PUBLIC HEALTH NUTRITION: CURRENT CONCERNS

### CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Public Health Nutrition: Current Concerns	4	3	1	0	Class XII	Nil

### LEARNING OBJECTIVES:

- To understand the varied dimensions of nutritional issues and identify different approaches that can be applied at the community level to improve nutritional well-being.
- To attain knowledge about the policies and intervention programs in India aimed at addressing