EXTENDED LECTURE OUTLINE

FSC 321 **Food Toxicology** **(2+1)**

Sl.No.	Topics	Hours
1.	**Bakery products:** Bakeryconcept, types of baked products: 1. Quick breads: muffins, biscuits, popovers, cream puffs, wafers and pancakes, doughnuts, 2. Yeast breads or leavened breads. 3.Cakes and biscuits. Specifications:Protein and gluten requirement as per BIS and PFA specifications, FSSAI guidelines for bakery products.	2
2.	**Composition of flour:**Wheat flour- weak flour, strong flour, wheat proteins, classification of wheat proteins, protein quality- gluten, gliadin, glutenin. Protein in relation to dough characteristics and baked product quality. Flour functional tests and flour composition tests.	1
3.	**Bakery ingredients:** Classification based on functions **-** 1)Structure builders- provide structure and texture include flour, eggs and milk; 2) Tenderizers-provide softness and shortness in product include fat, sugar and baking powder;3) Moisteners-provide moisture and keeping quality include milk, water, egg, syrup; 4) Driers: absorb and retain moisture like milk solids and starches; 5) Flavours- Provide natural flavour include cocoa, chocolate, egg, butter, vanilla, etc.	2
4.	**Processing and equipment in bakery unit:** Mixing process, scaling of ingredients, fermentation process, Proofing and baking. Bakery Equipment: Small equipment- mixing bowls, muffin pans, moulds, rolling pins, juicer, hand blender, baking trays etc. Large equipment- weighing machine, flour sifter, spiral dough mixer, oven, refrigerator, etc.	1
5.	**Bread:** Types- Pan bread, hearth bread, flat bread/chapati, rolls and other small fermented breads. Ingredients- basic and optional. Formulation of White pan bread. Determination of farinograph characteristics of flour. Methods of bread preparation- Two widely used methods- 1) Sponge and Dough method-steps involved, advantages and disadvantages, 2) Straight dough method- steps involved, advantages and disadvantages, Other methods- Salt delayed method, No dough time method, Ferment and dough method. Characteristics of a good bread-External and Internal.Bread faults- a) External faults and their causes, b) Internal faults and their causes. Bread spoilage- microbial spoilage by moulds, yeast and bacteria; Staleness in bread- Crust staling, crumb staling, causes of staling.	6
6.	**Biscuits:** Meaning ofCracker, cookies and biscuits. Difference between biscuits and cookies. Types of biscuits- 1) Cream crackers, 2) Soda crackers, 3) Savoury or snack crackers, 4) Water biscuits and matzos, 5) Puff biscuits, 6) Hard sweet, semi-sweet and garibaldi fruit sandwiched biscuits, 7) Short dough biscuits.Raw materials/Ingredients used, Processing	4

	of biscuits, Suggestions in cookie making. Mixing method for biscuits- 1) Creaming method, 2) All-in-one method.	
7.	**Cakes:**Types of cakes-Layer, Pound and Foam type. Ingredients used and functions of ingredients. Methods of preparation-1) Sugar batter method, 2) Flour-batter method, 3) Blending method, 4) Boiled Method, 5) Sugar-water method, 6) All-in process method.	**1**
8.	**Confectionery and chocolate products: Types, specifications, compositions, ingredients, formulations, processing, equipment, packaging, storage and quality testing. Product quality characteristics, defects, causes and corrective measures:** Meaning, Types of Confectionery: 1) Sugar based confectionery, 2) Chocolate based confectionery, Types of sugar boiled confectionery- 1) Non-crystalline or Amorphous candy, 2) Crystalline candy. Indian confectionery based on ingredients used: a) Khoa based sweets, b) Channa based sweets, c) Flour, sugar and fat based, d) Other products. Factors influencing confectioneries: pH, acidity, TSS. Processing of confectionery products- Cooking, drop rolling, moulding, extrusion, plastic forming, wet crystallization and panning. Raw materials in confectioneries: Sugars, enzymes, milk proteins, soya proteins, gelling and whipping agents, confectionery fats, food colours and flavours. Caramel/toffee processing, Fondant- types of fondant, Fondantand Fudge processing, Chewing gum, Chocolate processing-ingredients, chocolate processes, Quality control and chemical analysis.	**8**
9.	**Snack foods:**Meaning**,** Types of snacks: Classification based on raw materials-Vegetables, fruits, restructured dough;based on method of manufacture- Frying, baking, extrusion and roasting; based on processing-First Generation, second generation and third generation.Popcorn-mechanism of popping, processing, equipment. Formulated Puffed Snacks-ingredients, processing, equipment, factors affecting quality of puffed snacks. Product characteristics and packaging requirements of snacks.	**2**
10.	**Snack food seasoning:** Ingredients used,Types of seasoning- Cheese, BBQ, (Barbeque), sour cream and onion, ranch. Preparation of seasonings.	**1**
11.	**Breakfast cereals, Macaroni products and malts:Types, specifications, compositions, ingredients, formulations, processing, equipment, packaging, storage and quality testing.** **Breakfast cereals:**Introduction**,** Classification: Traditional/Hot cereals and Ready-to-eat/Cold cereals. Types of cereals-Flaked cereals, Gun-puffed whole grains, Granola cereals, Shredded whole grains, Bran cereals.Packaging. **Macaroni products:** Meaning, introduction,Traditional kneading/sheeting process,Drying of Pasta. Types- Quick cooking pasta, precooked pasta,	**3**

	couscous,composition of pasta, Manufacture of Alimentary pasta. Size requirement of macaroni products. Alternative raw materials. Noodles: meaning, method of preparation, Types of noodles- a) Dry, b) Instant, c) Steamed; Standards of noodle products. **Malts:**Meaning**,** Types of malts- Diastatic and Non-Diastatic malts.	

References:

1. Text book of Bakery and Confectionery, Second Edition- Yogambal Ashok Kumar.
2. Text book of Bakery and Confectionery -Amit Kumar Gupta.
3. Bakery and Confectionery Products: Processing, Quality Assessment, Packaging and Storage Techniques - Lakshmi Jagarlamudi.
4. The Complete Technology Book on Snack Foods- Dr. Himadri Panda.