

Introduction to Baking

Introduction to Baking – Study Notes

1. What Is Baking?

- **Definition:** A cooking method that uses dry heat, typically in an oven, to transform raw dough or batter into finished products such as breads, cakes, pastries, and cookies.
- **Key Goal:** Develop desired texture, flavor, and appearance through controlled chemical and physical changes.

2. Core Principles

Principle	What Happens	Why It Matters
Heat Transfer	Conduction (from metal pan) ? Convection (air circulation) ? Radiation (oven walls)	Determines how quickly the batter cooks and how evenly it rises.
Moisture Management	Water evaporates, creates steam, and later sets the crumb.	Controls crumb softness, crust formation, and shelf?life.
Leavening	Gas (CO?, steam) expands the batter.	Gives rise, lightness, and texture.
Protein & Starch Gelatinization	Gluten (flour) coagulates; starches absorb water and swell.	Sets the structure so the product holds its shape after cooling.
Maillard Reaction & Caramelization	Browning of sugars & amino acids at >300?°F (150?°C).	Produces flavor, aroma, and attractive color.

3. Essential Ingredients & Their Functions

Ingredient	Primary Function	Typical Ratios (per 1?lb/450? g flour)
Flour	Structure (gluten) & bulk	100?%
Water / Milk	Hydration, dissolves ingredients, steam source	60?70?%

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Ingredient	Primary Function	Typical Ratios (per 1?lb/450? g flour)
Sugar	Sweetness, tenderizing, browning, yeast food	5?15?%
Fat (butter, oil, shortening)	Tenderness, flavor, aeration, crust softness	5?15?%
Eggs	Emulsify, leaven, add color & richness	5?10?%
Leavening Agents	Produce gas for rise	Yeast: 1?2?% (by flour weight) Baking powder/soda: 1?2?%
Salt	Flavor enhancer, strengthens gluten	1?2?%
Add?ins (nuts, fruit, spices)	Flavor & texture	Variable

Percentages are expressed as **baker's percentage** ($\text{ingredient weight} \div \text{flour weight} \times 100$).

4. Basic Baking Techniques

Technique	Description	Typical Uses
Creaming	Beat butter + sugar until light & fluffy; incorporates air.	Cakes, cookies
Meringue	Whip egg whites with sugar to form a stable foam.	Angel food cake, pavlova
Kneading	Work dough to develop gluten network.	Bread, pizza dough
Folding	Gently incorporate light ingredients (e.g., whipped egg whites) without deflating.	Soufflés, chiffon cakes
Proofing	Allow yeast dough to rise in a warm, humid environment.	Breads, rolls
Blind Baking	Bake a crust without filling (often with weights).	Pies, tart shells
Glazing / Egg Wash	Brush with liquid (egg, milk, sugar syrup) before baking for shine & color.	Pastries, breads

5. Equipment Checklist

| Category | Must?Have Items | Optional / Helpful | |-----|-----|