Culinary Institute of America

Dry-Heat Cooking with Fats & Oils, Thickening Agents, & Sauces

Learning Objectives

- Define and execute sautéing, stir-frying, pan-frying, and deep-frying techniques.
- Identify appropriate tools/equipment and ingredients that may be used for each method.
- Describe various coatings that are used on fried food.
- Describe how to dredge items using the standard breading procedure.
- Compare and contrast various thickening agents and techniques.
- Discuss the major categories of sauces and state key characteristics of each.
- Identify and categorize various popular sauces and describe the key characteristics of each.

Sauté

- Uses naturally tender, quick-cooking ingredients (thin cuts of meat, vegetables, seafood)
- A small amount of high-smoke-point fat or oil is used to coat the pan lightly
- High-heat cooking to brown the outside and retain moisture
- Food is kept moving by tossing or stirring for even cooking and to prevent burning
- Cooking juices and fond provide flavor

Sauté Equipment

Sautoir

- Heavy, shallow pan with straight, vertical sides
- Wide surface for even browning, searing

Sauteuse

- Shallow, wide based pan with sloped sides
- Long handle for easy control

Stir-frying

- Traditional Asian method, similar to sautéing, using speed and high heat
- Ingredients are cut small and uniform to cook quickly and evenly
- Uses a small amount of high-smoke-point oil to coat the pan
- Food is constantly stirred or tossed to avoid burning and ensure searing
- Cooked in stages: aromatics, proteins, vegetables, finishing sauce
- Flavor comes from sauces and aromatics

Stir-fry Equipment

Wok

- Deep, bowl-shaped, slope-sided pan
- Sloped sides for tossing and minimal oil use

Wok ring

- Used to stabilize a round-bottom wok on a flat stovetop burner

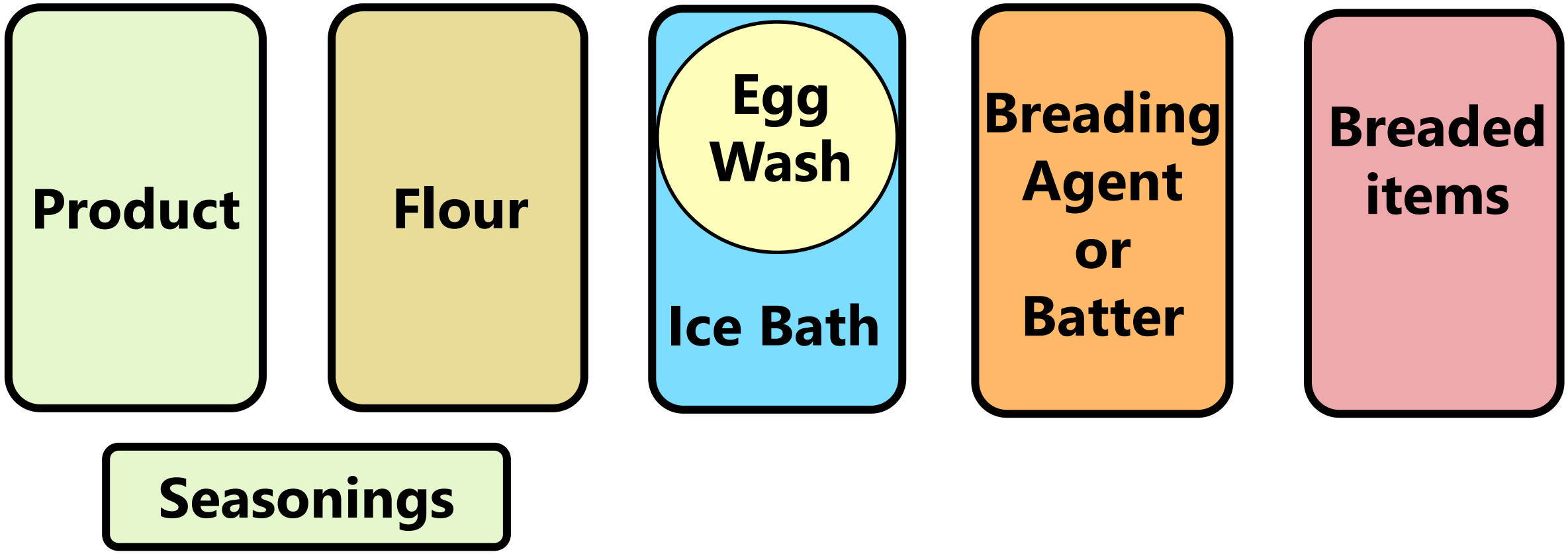
Wok chuan & ladle

- Long-handled tools
- Used for stirring, tossing, and scraping, adding liquids

Pan Frying

- Items usually coated with breading or batter
- Partially submerged in fat or oil at about 325°F
- Fat or oil covers the bottom ⅓ to ½ of items
- Only exterior crust is browned
- Can be completely cooked in the pan or finished in oven
- Best choice for items that warp when cooked

Breading Method: Mise en Place



Deep-Fat Frying

- Almost always coated with breading or batter
- Fully submerged in fat or oil at about 350°F to 375°F
- Fried until fully cooked, inside and out
- Creates a crisp, golden crust and moist interior
- Best served immediately for ideal texture and flavor
- Used for quick, even cooking and achieving a uniform, crunchy exterior

Methods of Deep-Fat Frying

- **Basket:** for breaded items or food that will not stick together
- **Double Basket:** contains food that floats
- **Swimming:** For battered items or food that sticks together

Deep Fryer Care & Best Practices

Oil quality:

- Use high-quality cooking fat or oil
- Filter oil regularly to remove particles and maintain flavor

Operational efficiency:

- Avoid overloading—causes oil temperature drops and soggy food
- Maintain proper cooking temperatures for each food type

Cleaning & maintenance:

- Wipe down fryer exterior daily to prevent buildup
- Deep-clean fryer monthly for safety, hygiene, and efficiency

Thickening Agents

There are three main types of thickening agents:

Beurre Manié

Slurry

Roux

Beurre Manié

- **Ingredients:** 1:1 ratio of soft butter & flour
- **Method:**
  - Knead butter and flour together
  - Add to boiling liquid at end of cooking
- Creates a shiny, smooth texture
- Provides a subtle, slightly, buttery flavor
- Best for thickening sauces, soups, stews

Slurry

- **Ingredients:** 1:1 ratio of pure starch & cold liquid
- **Method:**
  - Mix water and starch
  - Add, in small additions, to boiling liquid at end of cooking
- Consistency of heavy cream
- Twice the thickening power of flour alone
- Best for thickening soups, stews, gravies, sauces

Types of Slurry

Cornstarch:

- **Gel strength:** firm
- **Thickening:** strong, breaks in acid or high heat

Tapioca:

- **Gel strength:** elastic
- **Thickening:** moderate, good for freezing, may turn stringy if overcooked

Arrowroot:

- **Gel strength:** soft
- **Thickening:** moderate, good in acid and freezing

Roux

- **Ingredients:** 2:3 ratio of fat to flour by weight
  - **Fat:** clarified butter or neutral oil with high smoke point
  - **Flour:** usually AP
- Cooked before adding to liquid
- Develops a darker color, deeper flavor as it cooks
  - Different stages used for different things
- More flavorful and smoother than a slurry
- Products thickened with roux will be opaque

Roux Method

1. Heat the fat in a small saucepan over medium heat until hot but not smoking
2. Gradually whisk in flour until smooth paste is formed
3. Cook to desired roux stage
   - White, blond, brown, dark brown

Roux Stages

White Roux

- Cook for 2-3 minutes until the mixture is light and slightly puffed
- Used for sauces like béchamel

Blond Roux

- Cook for 5-8 minutes until the mixture turns a light golden brown and smells slightly toasty
- Used for thickening soups, stews

Brown Roux

- Cook for 10-15 minutes until the mixture becomes a deep brown and develops a nutty flavor
- Used in savory sauces, gravies

Dark Brown Roux

- Cook for 20-30 minutes until the mixture is a dark brown color
- Used in Creole/Cajun dishes for its unique flavor

Combining Roux & Liquid

1. Combine with liquid and stir vigorously
   - If roux is cooled to room temperature, add to hot liquid
   - If roux is hot, add cold liquid to it
   - Hot rue & hot liquid OR cold rue & cold liquid cause lumps
2. Heat the roux and liquid mixture
   - Starches in roux start to absorb the liquid and begin swelling at 175°F
   - Starches are fully swollen and liquid reaches its max thickening potential at 185–200°F

Roux to Liquid Thickening Guide

White & Pale (Blond)

Per gallon of liquid, combine with:

- **Light consistency:** 12-14 wt. oz.
- **Medium consistency:** 16 wt. oz.
- **Heavy Consistency:** 18 wt. oz.

Brown

Per gallon of liquid, combine with:

- **Light consistency:** 16 wt. oz.
- **Medium consistency:** 18 wt. oz.
- **Heavy consistency:** 20 wt. oz.

What is Sauce?

- A flavorful liquid or semi-liquid used to enhance a dish's taste, texture, appearance, and overall appeal

Functions of sauces:

- **Adds flavor:** complements or contrasts the main ingredient
- **Adds moisture:** prevents dryness and improves mouthfeel
- **Enhances texture:** introduces smoothness, richness, or a contrasting element
- **Improves appearance:** adds color, shine, plating appeal

Mother Sauces

- Mother sauces are the core foundational sauces in classical French cuisine
- A wide variety of other sauces, known as derivative or daughter sauces, are made from these
- This system of sauce making dates back to 19th-century French culinary traditions
- Codified by chefs like Marie-Antoine Carême and Auguste Escoffier

Mother Sauces

Preparation:

- Made in large batches
- Stored for later use
- Rarely served on their own

Flavor & texture:

- Mild, neutral base
- Lacks final flavor and texture by design

Function:

- Starting point for more complex sauces
- Supports consistency, efficiency in kitchens
- Easily customized for specific dishes

Popular Mother Sauces

- **Béchamel:** made from roux, milk
- **Velouté:** a light stock-based sauce thickened with a roux
- **Espagnole:** a brown sauce made from a dark roux/brown stock
- **Hollandaise:** an emulsion of egg yolks, clarified butter, and acid
- **Tomato:** made from tomatoes, thickened with a roux

Daughter Sauces (Derivative Sauces)

- Made by enhancing a mother sauce
- Transformed by adding herbs, spices, aromatics, wine, stock, cream, or other liquids
- Adjusted to suit a specific dish, flavor profile, or cuisine style
- Typically prepared in small batches closer to service for freshness and customization
- Allow chefs to adapt classic techniques to modern cuisine
- Provide flavor variety, menu flexibility, and creative expression in professional kitchens

Popular Daughter Sauces

- **Bearnaise:** hollandaise base with tarragon, shallots, vinegar
- **Mornay:** bechamel base with grated Gruyère, Parmesan, or Cheddar cheese
- **Allemande:** velouté base with egg yolks lemon juice, cream
- **Bordelaise:** espagnole base with demi-glace, red wine, shallots, marrow
- **Marinara:** tomato base with onion, garlic, herbs

Contemporary Sauces

- Quick to make with less labor and skill than mother sauces
- Typically healthier, less fat, fewer thickeners
- Made in small, fresh batches for immediate use
- Feature bold, creative flavors from global and regional cuisines
- Use seasonal ingredients and modern thickening methods:
  - Reduction, emulsion, purées, or starches
- Not all sauces are based on mother sauces

Contemporary Sauce Types

- **Vinaigrettes:** oil-based with vinegar or citrus
- **Emulsions:** aioli, mayo, or blended fat-based sauces
- **Coulis & purées:** smooth fruit or vegetable sauces
- **Gastriques:** sweet and tangy reductions
- **Salsas & relishes:** fresh or cooked chunky sauces
- **Infused oils & butters:** flavored fats for finishing
- **Global styles:** chimichurri, tahini, ponzu, mole

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Any Questions?