

Bakery and Pastry Production

Level-2

Based on November 2022 Curriculum Version II



Module Title: Pastry Items and baking process

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Introduction to the module

In bakery and pastry production field, producing variety of products will enhance the Hospitality industry serving the customer in full capacity and it is very important to keep the standards of bread and other sweet desserts service. On the other hand it is also a means to create a job for small scale industries and to street food service providers

This module is designed to meet the industry requirement under the bakery and pastry production occupational standard

This module covers the units:

- Selecting Baking equipment
- bakery ingredients/ item
- techniques in baking
- methods of cookery for bakery product

Training Objective of the Module

- Select& use baking equipment
- measure bakery ingredients/ items
- apply techniques in baking
- apply basic methods of cookery for bakery product

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” given at the end of the unit and
5. Read the identified reference book for Examples and exercise

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Unit one: selecting baking equipment

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Introduction to basic equipment
- Select& Use baking equipment

○

This unit will also assist you to attain the learning outcomes stated in the cover page.

Specifically, upon completion of this learning guide, you will be able to:

- Identify baking equipment
- Select appropriate baking equipment
- Use equipment appropriately & safely

1.1. INTRODUCTION TO BASIC EQUIPMENT

This is a branch of the culinary field and involves making bread, pastries, pizzas, quiches, cakes, and pies. However, this branch relies mainly on the use of an oven to bake the food. Unlike chefs, bakers can make both sweet and savoury dishes and can specialize in certain areas.

Pastry- is a type of dough made with flour, water and shortening. Baked pastry dough can be sweet or savoury, and consumed alone or with fillings.

Tools and equipment

Over the years basic equipment used in pastry has changed very little in form of their shapes and functions. However, greater mechanization and automation has been introduced and different materials and modern manufacturing techniques have been employed. It has become easier to maintain, more labour and energy saving, easy to clean, more hygienic and thus more efficient. With this more accuracy has been deployed in pastry works and high standard products are achieved at a shorter time. However, certain rules and regulations on how to handle pastry tools and equipment must be adhered to by all pastry chefs in order to reduce costs and maintain these tools and equipment in good condition.

A tool is any items that can be used to achieve a goal. Tools can be non-mechanical as well& do not need power.

Equipment usually denotes a set of tools that are used to achieve to specific objectives. That means it used for mixing, baking, blending, freezing, chilling, processing, and much more

In commercial kitchen equipment can be divided in to two categories:

A).Hand tools: - are generally small in size and we can put on the shelf or in a drawer.

B).Stationary equipment: - it is heavy & placed in one defined place

Equipment may include but not limited to:

- baking tray
- blenders
- bowl
- deep-fryers
- electric, gas or induction ranges
- food processors
- Grinder Kneader
- microwaves
- mixers
- ovens, including combination ovens
- pastry brush
- pastry wheel
- Proofer
- Refrigeration units
- Roller
- salamanders
- slicers
- steamers
- utensils

Type, photo& function of bakery& pastry equipment



Piping bag and nozzle: used to push out soft mixtures such as cream, icing or mashed potato into attractive shapes.



Pastry brush: a brush with thickly packed bristles used for brushing pastry and applying glazes, marinades etc.

Tongs: made from stainless steel or plastic, they are used to lift and turn food



Balloon whisk: used to beat air into and lumps out of a mixture by whisking the food through loops of wire.



-dough arm



Mixer

-scale

- paddle

- balloon whisk

measuring jug

-The **paddle**: - is a flat blade used for general mixing

-The **wire whisk**: - is used for such tasks as beating cream, and eggs

-The **dough arm**: - is used for mixing and kneading dough



Pastry wheel



scraper / dough cutter



mixing bowls +



rolling pin



soufflé dish



charlotte mold



muffin pan



Baking

1.2. SELECT& USE BAKING EQUIPMENT

Equipment should be constructed from materials which are non-toxic, non-flaking, corrosion-resistance, smooth and free from breaks, open seams, cracks, chips, and difficult to clean internal corners.

Food contact surfaces will need regular disinfection and care must be taken in selecting materials. The preferred material for most equipment is food-grade stain less steel (18/8 contains 18 percent chromium and 8 percent nickel.)

Handles of knives, brushes and other equipment, rolling pins, spoons and paddles and cutting boards can now be obtained from cleansable material.

Safety in the kitchen includes:

- A regular inspection and checking system for mechanical, electrical and gas ranges.

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- Any faults in equipment must be reported and repairs carried out.
- Appropriate cleaning and correct handling of tools and equipment
- Metal trays, pans, china or glass that is very hot should never be placed in cold water
- Small metal tubes, cutters, knives or other sharp tools should never be left in the sink
- Always keep equipment in a dust free cupboard and store tidily.
- Operating gas or electrical ranges safely
- Never use any equipment until you are instructed how to operate
- Read the manual of any machine before operating

‘ EVERY THING HAS A PLACE AND THERE IS A PLACE FOR EVERY THING ‘

- When cleaning electrical appliances, switch off power supply, when re-assembling equipment ---make sure it is done correctly
- Use the right tool or equipment for its intended use

SELF –CHECK #1

Instruction: Answer the following questions:

Part I. Write a short answer

1. In the pastry kitchen it is mandatory to have different kind of tools and equipment for its purpose. What is the difference between tools and equipment? Explain.
2. List some tools and equipment to be used in the pastry kitchen
3. How do we use pastry kitchen tools and equipment safely & how do we keep safe? Give some explanations.

Part II. Choosing

- 4).----- is usually denotes a set of tools that are used to achieve to specific objectives.

- A) Tools
- B) Equipment
- C) Mixer
- D) None

- 5).---is an equipment used to beat air into and lumps out of a mixture by whisking the food through loops of wire.

- A) Pastry brush
- B) Oven
- C) Tongs
- D) Balloon whisk

UNIT TWO: MEASURE BAKERY INGREDIENTS/ ITEMS

This unit to provide you the necessary information regarding the following content coverage and topics:

- Ratio of commodities for specific baking
- Mixing process
- problems in measuring ingredients

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Calculate correct quantities and ratios of commodities
- Know & perform mixing process
- Identify problems when measuring ingredients

2.1. ratio of commodities for specific baking

2.1.1. CALCULATING CORRECT QUANTITIES AND RATIOS OF COMMODITIES

Bakery ingredients

- flour
- salt
- fat
- baking powder
- baking soda
- egg
- sugar
- flavouring
- spices
- colouring agent
- Milk etc...

Emergency substitution

- Cake Flour – Make your own cake flour, measure out 1 cup of all-purpose flour and remove 2 tablespoons. Replace the 2 tablespoons with corn starch.
- Baking Powder – To replace 1 teaspoon of baking powder, combine 1/4 tsp baking soda and 1/2 tsp of cream of tartar.
- Baking Soda – 4 teaspoons of baking powder can replace 1 teaspoon of baking soda.



Fig2.1 croissant

Your Guide to Working with Different Types of Pastry Dough

Types of Pastry. There are numerous types of pastries that you can experiment with. ...

- Puff Pastry. ...
- Short Crust Pastry. ...
- Short Crust and the Art of Blind Baking. ...
- Pate Sucrée (aka Sweet Short crust Pastry) ...
- Phyllo (Filo) Pastry. ...
- Rough Puff Pastry. ...
- Choux Pastry.

■

Function of pastry & bakery ingredients

- ✓ Baking Soda and Baking Powder-are leavening that improve the texture and appearance of baked goods. They create a chemical reaction that produces air bubbles helping batter and dough rise.
- ✓ **Baking powder**.is probably the most common aerating agent in baked products like cakes. It is made up of bicarbonate of soda and cream of tartar. Baking powder is a chemical aeration agent.
- ✓ **Yeast**. Belongs to the fungi family. It ferments carbohydrates (sugars) to produce carbon dioxide gases and alcohol, which aerate bread and other yeasted products, giving it volume and texture. These by-products of yeast also contribute to the colour and aroma of bread and other yeasted products.
- ✓ **Butter**-if your recipe states to use room temperature butter, you can soften the butter by placing sliced butter in a bowl next to two cups of boiling water in the microwave for about 10 minutes
- ✓ **Corn Starch**- helps create a crumbly and tender texture in baking. It's also a great thickener in sauces, soups, puddings, and pie fillings.
- ✓ **Egg**. Are another basic ingredient in many baked products.They provide structure, aeration, flavour and moisture. They also tenderise cakes and add colour and nutritive value.
- ✓ **Milk**. Is used in baked products to improve texture and mouth feel. The protein in milk also gives a soft crumb structure in cakes, and contributes to the moisture, colour and flavour of a baked product. Cakes that contain milk also tend to have a longer shelf life.

- ✓ **Salt.**is usually only added in very small amounts to baked products, but it has a noticeable effect on the flavour of baked products. It not only provides its own flavour but brings out the natural flavour of other ingredients. In bread dough, salt strengthens gluten and improves the consistency of the dough. Carbon dioxide given off by the yeast is more easily trapped by the strengthened gluten, which makes a better loaf of bread. Salt is also a good preservative as it absorbs water so there is less free water for bacterial and fungal growth.

A. Formulas and measurement

All ingredients must be weighed& measured.

Accuracy of measurement, measurement by weight rather than by volume, because weighing is much more accurate

- A recipe- gives you information on how to prepare food. Recipes include information such as the name of the recipe, a list of ingredients and step-by-step instructions on what to do with each ingredient (such as when to add it and how to prepare it) how to garnish and serve the food.
- Standard recipes-are used to standardize the production of every food item on a menu. They ensure that the food will be consistent in quality, quantity, cost and presentation while a recipe will give you a precise set of instructions about how to prepare a dish, it is assumed that you already have a good knowledge and understanding of culinary terminology

Care needs to be taken when adjusting recipes as mistakes can easily occur and the wrong quantity of just one ingredient (e.g. salt) can spoil the whole product.

Standard features of a recipe:

- The standard features of a recipe include:
- Preliminary preparation
- Equipment
- Quantity of ingredients
- Methods
- Baking temperature
- Baking time
- Number of portions recipe will produce

- Total cost of product

2.2. MIXING PROCESS

2.2.1 KNOWING & PERFORM MIXING PROCESS

Introduction:



Fig

The process of making pastry includes mixing of the fat and flour, adding water, chilling and then rolling out the dough. Chilling before rolling is essential since it enables the fat (lard, butter etc) to harden again and thus create flaky layers in the dough.

Baking: - is the cooking of food by dry heat in an oven in which the action of the dry convected heat is modified by steam.

Bringing together a balanced quantity of various ingredients in a proper form is a definition of the art and science of baking. When you consider that most bakery products are made of the same few ingredients; flour, shortening, sugar, eggs, water, or milk and leavenings then you should have no difficulty understanding the importance of accuracy, since slight differences in proportions or procedures can mean great differences in the final product.

Purpose:

- To make food digestible, palatable, and safe to eat
- To create eye appeal through colour and texture
- Baked goods offer variety to the menu and are popular in the diet.

Basic rules in the baking process

- ✓ Pre-heat the oven for 10 min.
- ✓ Measure the ingredients accurately
- ✓ Make a dough based on recipe
- ✓ Prepare the baking sheet, moulds in advance

- ✓ Bake at correct temperature& time
- ✓ Do not open the oven while baking until done

Key baking terms:

Many of the terms used by the baker are the same as those of the rest of the kitchen, but they are defined differently. It is inclusive of the key terms necessary to begin mastery of the art and science of baking.

- Batter: - a mixture of ingredients and liquid that is thin enough to pour
- Caramelize:-to heat sugar slowly until it is melted and brown in colour.
- Coat:-to spread a surface with cream, flour, sugar or other substance.
- Combine:-to mix ingredients thoroughly
- Crimp:-to seal together (for example the edges of a two crust pie) by making a decoration
- Dough: a mixture of ingredients and liquid stiff enough to shape or knead.
- Dust: - to sprinkle lightly with flour, sugar, or other substance.
- Egg wash: - a mixture of egg or egg-yolk with milk or water.
- Garnish:-decorating with whipped cream, butter cream, icing, and fruits.
- Knead:-manipulating dough to achieve a smooth consistency.
- Luke warm:-neither cool nor warn, approximately body temperature.
- Meringue:-egg-whites and sugar beaten to a stiff consistency.
- Pinch: - a pinch is the amount you can hold between your thumb and forefinger.
- Roll out:-to spread the surface of a product with a rolling pin/ to flatten the dough to the desired thickness.
- Scald: - to scald milk is to bring to a point when bubbles appear (before boiling point)
- Punch down: - to hit the proved dough down words with fists.
- Pipe:-to squeeze a soft, smooth textured substance through a pastry tube, thus making a design or decoration.
- Set: allowing an item to go from a soft or a liquid state to a firmer state.
- Sift: - removing possible lumps of dry ingredient through a strainer or sifter.

- **Scald:** - to scald milk is to bring to a point when bubbles appear (before boiling point)
- **Pipe:**-to squeeze a soft, smooth textured substance through a pastry tube, thus making a design or decoration.
- **Beating:**Beating is mixing materials briskly, lifting and dropping them with an appropriate tool. Whether done using an electric mixer or by hand with a fork, spoon, or whisk, to beat is to vigorously mix, blend, or stir a mixture in a circular motion.
- **Blending:**Blending is a technique where two or more ingredients are combined so they are smooth and equally distributed throughout the mixture. A spoon, fork, rubber spatula, whisk, electric mixer with paddle attachment, food processor, blender or even bare hands can be used for this technique. Blending differs from beating in that its sole purpose is to combine the ingredients, not to incorporate air into the mixture.
- **Cutting-in:**is a technique used in pastry making (scones, biscuits) involving the mixing of a cold solid fat (butter, margarine, shortening) into dry ingredients (flour mixture) until the mixture is blended but still contains small flour-coated pieces of cold fat. This combining of the cold fat and dry ingredients must be done quickly and with a light hand so that the fat does not melt
- **Creaming:**is mixing or beating technique that combines ingredients to make a uniform mixture and also incorporates air into this mixture. Softening fat by friction with a spoon, usually followed by gradual incorporation of sugar as in cake-making. The butter should be at room temperature so it incorporates the sugar sufficiently to produce a smooth and creamy batter that is light and fluffy. A whisk, wooden spoon, or electric mixer with paddle attachment can be used.
- **Whipping:** Whipping is a mixing technique used to incorporate air into an ingredient or mixture (i.e. egg whites, heavy cream) to increase its volume and make it light and fluffy. This is done by vigorously beating in a circular motion using a wire whisk or electric mixer. Egg whites are often whipped and then added to cake batters to make them less dense so they have more volume when baked. Whipped heavy cream can be added to custards or sauces to make them lighter.
- **Whisking:**is a technique to rapidly beat or whip as much air (volume) as possible into a mixture or one ingredient (usually heavy cream or egg whites). This is accomplished by using a wire whisk or electric mixer

- **Folding:** is a simple but crucial technique used when combining a light and airy ingredient into a heavier ingredient or mixture in such a way as each ingredient maintains its original volume. This technique must be done quickly but gently and stop 'folding' as soon as the ingredients are blended. Start by placing one quarter of the lighter mixture on top of the heavier mixture. With a rubber spatula cut down vertically through the two mixtures, sweep across the bottom, up the nearest side of the bowl, and over the top of the mixtures (go in clockwise direction). Rotate the bowl a quarter turn counter-clockwise and repeat the down-across-up-over motion. This technique is commonly used to incorporate flour into a sponge cake base and adding egg whites to a cake batter.

Unit Three: Baking Techniques

This unit to provide you the necessary information regarding the following content coverage and topics:

- 3.1 Knead the mixture& proof
- 3.2 portion
- 3.3 Bake

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- knead the mixture&proofing
- practice portioning
- Follow dough procedures and bake

3.1. APPLY TECHNIQUES IN BAKING

3.1.1. KNEAD THE MIXTURE & MAINTAIN CONSISTENCY

I). Preparation techniques of pastry product

- Blending. This can be done using several different instruments from an electric mixer to simpler tools like spoons, whisks, and rubber spatulas. ...
- Folding
- Beating
- Cutting
- Creaming
- Kneading
- Whipping
- Stirring

II). what are the principles in the preparation of pastries?

General rules

- Measure the ingredients carefully.
- Use good quality flour. ...
- Keep everything as cool as possible otherwise the fat may melt which would spoil the finished dish.
- Introduce as much air as possible during making.
- Allow to relax after making to allow the fat to harden.
- Handle the pastry as little as possible.

iii). basic baking techniques

- Scoop and Level Method.
- Spoon and Level Method.
- Scoop and Pack Method.

Quick bread mixing or easiest mixing method

- The Creaming Method.
- Rub In The Flour Method.
- Hot Milk Method for Baking.
- Kneading the mixture
- Maintaining consistency of the mixture
- Portioning Proofing the dough and baking

Baking uses convection heat to cook and is similar to roasting but with different outcomes. For example, baking refers to breads, biscuits, cakes and pastries.

Remember – be careful opening the oven door and when removing items from the oven make sure you are wearing oven-mitt or use a dry clean tea towel.

3.1.2.. Proof the dough

TABLE 3.1 BAKE INGREDIENTS

Ingredient	Type	Usage Level (Baker's Percent)	Function
Flour	Pastry flour, low protein flour	100%	<ul style="list-style-type: none"> • Provides low gluten network structure • Imparts color, a result of Maillard's browning reaction • Yields tender products
Fat	Solid fats (butter or mar garine)	50-80 %	<ul style="list-style-type: none"> • Improves mouth feel and moistness • Increases tenderness by coating starch and protein particles • Provides flakiness • Prevents staling • Imparts flavor

Sugar	White granulated sugar	25 – 40 %	<ul style="list-style-type: none"> • Provides sweetness • Tenderizer • Retains moisture, and improves shelf life • Imparts color, a result of Maillard's browning reaction
Salt	Granulated	0.5 – 1.0 %	<ul style="list-style-type: none"> • Enhances flavor
Water	Ice cold	25 – 30 %	<ul style="list-style-type: none"> • Controls fat temperature • Aids in flaky crust texture

Proofing (aka final fermentation, final rise, second rise, or blooming) is the dough's final rise that happens after shaping and just before baking. The entire dough fermentation process is sometimes referred to as the proofing process.

In bread baking, the word proofing most commonly refers to the final rise dough undergoes, which takes place after being shaped into a loaf, and before it is baked. In practice, however, the words proof and fermentation are sometimes used interchangeably.

3.1.3 PORTION AND BAKE INGREDIENTS

Ingredients

Commonly used ingredients in pastry dough

- During baking it is better to refer the baking temperature & time from standard recipe.

Unit four: Basic methods of cookery for bakery product

This unit to provide you the necessary information regarding the following content coverage and topics:

- heat transfer methods
- methods of cookery
- Problems with the cooking process

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- know heat transfer methods
- know various cookery methods& Cooking process
- Identify Problems with the cooking process

4.1. Heat transfer methods

4.1.1. KNOWING HEATTRANSFER METHODS

Baking is the final step in making yeast-leavened (bread, buns, rolls, crackers) and chemically-leavened products (cakes, cookies). It's a thermal process that uses an oven, which transfers heat to the dough pieces via

Conduction – is the transfer of heat from one item to another through direct contact.

- Through heated surfaces

Radiation – heat that cooks food using waves of heat. For example a toaster or a salamander.

_Radiation from heat sources such as flames

Convection- process by which heat is transferred by movement of a heated fluid such as air or water.

The heat in turn activates a series of physicochemical changes, responsible for transforming the raw dough into a baked good with a firm, dry crust and a soft crumb.

4.2. Methods of cookery

4.2.1KNOW VARIOUS COOKERY METHODS & COOKING PROCESS

Origin

Baking is probably as ancient as human kind. The first civilizations in recorded history, the Egyptians and Mesopotamian people, cultivated wheat. They learned the art and craft of baking bread after discovering that wheat kernels could be eaten in a palatable form by grinding and turning them into flour, and then adding water to create paste which could be cooked and consumed. At the time, fire and manual work were key for the development of primitive baking processes.

Baking sets the final structure to baked goods. It involves simultaneous heat and mass transfer phenomena. The heat travels from the surrounding air into the interior of the dough or batter while moisture and other liquid compounds travel/escape from the core towards the exterior or surrounding air due to evaporation.

While both yeast and chemical leaveners can result in gas development and volume build-up, yeast is essential for the development of unique flavors in breads and some baked goods.

Baking of yeast-leavened bakery products (dough-based systems)

Coming out of the final proofer, the bread dough is well aerated with a typical internal temperature close to that of the proof box, around 35°C (95°F). As the dough pieces enter the oven, their surface temperature begins to increase and heat transfers slowly towards the core

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of the product. The oven temperature can be set, according to the type of product being processed, at any point between 200–300°C (390–570°F).

In general, there are three major stages in the baking process: expansion of the dough, drying of the surface, and crust browning. These can be subdivided into the following stages (in the order of temperature increase).

Formation and expansion of gases (oven spring). A rapid rise in volume takes place at the beginning of baking at a core temperature of 35–70°C (95–158°F). This rise creates the oven spring. Five events occur simultaneously to produce the oven spring in the first 5–8 minutes of baking:

Yeast reaches its maximum fermentation rate and generates carbon dioxide, CO₂ gas (CO₂ is also produced by chemical leavening).

Release of carbon dioxide gas from the saturated liquid dough phase into the surrounding gas cells.

Expansion of the gasses trapped in cells (nitrogen from air and CO₂) and generated during mixing, makeup, and proofing.

Evaporation of water/ethanol mixture.

Killing of yeast and other microorganisms. This usually occurs at an internal temperature of 60–70°C (140–160°F) where the cells can no longer contribute to the gas production or volume increase.

Gelatinization of starch. At 76°C (170°F), starch begins to gelatinize as granules become fully swollen with local free water. Thanks to starch gelatinization and protein denaturation, the dough is converted into bread and a structure is set.

Coagulation/denaturation of gluten (egg or other) proteins that make up the continuous phase. From 60 to 70°C (140 to 160°F), the proteins begin to denature. As a consequence, gluten becomes increasingly tough and stiff as it irreversibly forms a gel. Moisture loss also imparts rigidity to the product being baked.

Inactivation of enzymes in the dough (naturally-occurring or added) at 80–95°C (176–203°F).

Crust formation and browning (non-enzymatic browning reactions and caramelization).

Maillard browning takes place above 105°C (220°F) and requires the presence of a reducing sugar together with an amino acid. Sugars caramelize at 160°C (320°F).

Baking of chemically-leavened products

In this case, the three stages of baking (oven spring, setting of structure and crust formation/coloration) can undergo changes in response to differences in type and amount of ingredients in formulation. Chemical reactions and physical transitions during heat processing may be affected by:

High content of water in system (hydration of flour and other dry ingredients) which creates a liquid or fluid batter.

Flour to sugar ratio (high ratio cakes contain more sugar than flour). This has a big impact on starch gelatinization, protein coagulation and water evaporation. Low flour content also requires higher levels of structure building ingredients such as whole eggs.

Rich formulations (higher content of soluble solids such as sugars, fat, etc.) that shift the system towards an aerated oil-in-water emulsion known as batter.

Absence of yeast but presence of leavening acids and bases that can modify leavening reactions and these require specific conditions of temperature and available water.

Modification of pH due to the presence of chemical leaveners which can affect final color of crust/crumb and taste of finished product.

The baking process is responsible for major weight loss in the dough/batter, mainly moisture (8–12%) and volatile organic compounds, especially in pan breads and buns. Chemically-leavened products may have higher bake losses.² For labeling purposes, the loss in weight during baking is taken into account during dough dividing or batter depositing.

The main parameters involved in the baking process include: time, temperature, humidity, air flow (convection systems) and heat flux. These process variables are a function of the size, unit weight, formulation, water absorption, type and target characteristics of the finished product. Baking times may range from 2–60 minutes, depending on the type of oven and heating pattern.

Baking process

- Dry baking: - when baking steam rises from the water content of the food this steam combines with the dry heat of the oven to cook the food e.g. cakes, and other pastry products.
- Baking with increased humidity: - When baking certain foods the oven humidity is increased by placing a bowl of water or injecting steam into the oven, thus increasing the water content of the food and so improving the product quality.
- Baking with heat modification: - placing food in a container of water (bain-marie) e.g. Baked egg custard modifies the heat so that the food cooks more slowly.

4.3 problems with the cooking process

4.3.1. Identifying Problems with the cooking process:

Note

Do not open the oven door any more than necessary to avoid high energy loss and interruption of baking.

Watch cooking time closely, Space items well to allow for heat circulation.

There are some problems during baking process of pastry:

Too Dense

A cake that comes out of the oven very dense simply did not get enough air in the batter.

This could have happened in a number of ways so you may need to troubleshoot your batter to find out how to add the air back to your cake. Here are a few solutions to begin with.

First, make sure you are beating the batter long enough, especially at the beginning of a recipe which instructs you to cream butter and sugar- make that mix nice and fluffy!

If your batter uses oil instead of butter, be sure to really mix the batter well and do not rush it- let the air bubbles form!

Another reason for dense cake is a bad livener. Maybe your baking powder or baking soda are old and no longer working.

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You need a good livener to help the batter rise and lock that air in during the baking process. A cake that rises well will not be dense!

Too much flour in a cake will also cause it to be dense. Flour is loaded with heavy gluten that can weigh a cake down.

Check to make sure you measure your flour accurately and use cake flour which has less gluten than all-purpose flour (it's called cake flour for a reason- it's perfect for cakes!).

Preheat your oven for at least 20 minutes before putting your cake in. When the oven is at the right temperature, your cake will rise quickly in the nice hot heat.

In a cool oven, cake will not rise right away and the batter will begin to cook before it has a chance to puff up (baking soda and baking powder need heat to work!). A cold oven will definitely make a dense cake.

Cake Overflows

The easiest solution to this cake problem is to fill your pan with less batter. A good rule of thumb is to fill a cake pan half way to two thirds of the way up the sides of the pan. Anymore and you could easily have a cake explosion in your oven!

Sunken Cake

First and most likely problem here is that your cake was not actually fully baked. While a cake may look fluffy and golden brown on the outside, the center may not be completely cooked.

Use a toothpick or knife to test the center of the cake. If the utensil comes out cleanly with no sticky, wet batter on it, then it's done! If the center is still unbaked, leave the cake in the oven a little longer.

Sunken cakes can also be caused by the oven temperature being too cool or fluctuating too much.

If you open and close the oven door to frequently to check your cake, the oven temperature will be going up and down as well which makes it tricky for the cake to bake. The outside will bake faster while the center takes too long to get hot.

Cakes can also sink when there is not enough structure to hold the cake together. By structure, I mean eggs or flour, ingredients that bind the cake batter and hold it all together.

Stuck to the Pan

Once again, you think you have baked the perfect cake... until you try to take it out of the pan. The cake is completely stuck to the edges and the bottom (where it is really hard to get to) and all of your efforts to remove it from the pan are futile.

Of course, you learn the hard way that you should always grease a cake pan well. However, don't just grease it, flour it as well! This will definitely help the cake pop out of the pan after it bakes.

Crusty Edges

Maybe the middle of your cake is nice and fluffy but the edges are very crunchy and burned. This is most likely caused by too much pan spray or an over greased pan. When the pan has too much grease, the edges of the cake literally get fried.

Yes, it is important to grease the sides of the pan but a little bit goes a long way

SELF-CHECK QUESTIONS # 4

Instruction: - answer the following questions

Part I Give a short answer

Discusses the principles of cooking and outlines what is happening when heat is applied to food.

1. Why is it important to not open the oven door all the time?
2. What are the three principles of heat transfer and provide at least one example of a piece of equipment relating to each method?

Part II Choosing

3. Which one is heat transfer process by which heat is transferred by movement of a heated fluid such as air or water?

- A). Radiation
- B). Convection
- C). Conduction
- D). None

4. What are some problems during pastry baking process?

- A. Sunken Cake
- B. Too Dense
- C. Crusty Edges

Baking Temperatures and Times

	Temp (F/C)	Minutes
Breads		
Biscuits	425 - 450 F 218 - 232 C	10 - 15
Cream Puffs	375 F 190 C	60
Popovers	375 F 190 C	60
Quick Loaf Breads	350 - 375 F 177 - 190 C	60 - 75
Yeast Bread	400 F 205 C	30 - 40
Yeast Rolls		
Plain	400 - 425 F 205 - 218 C	15 - 25
Sweet	375 F 190 C	20 - 30
Cakes With Fat		
Cupcake	350 - 375 F 177 - 190 C	15 - 25
Layer Cake	350 - 375 F	20 - 35

	177 - 190 C	
Loaf Cake	350 F 177 C	45 - 60
Cakes Without Fat		
Angel Food & Sponge	350 F 177 C	50 - 60
Cookies		
Drop	350 - 400 F 177 - 205 C	8 - 15
Rolled	375 F 190 C	8 - 10
Egg, Meat, Milk & Cheese		
Souffle (in a hote water pan)	350 F 177 C	30 - 60
Custard (in a hot water pan)	350 F 177 C	30 - 60
Macaroni & Cheese	350 F 177 C	20 - 30
Meat Loaf	350 F 177 C	60 - 90
Meat Pie	400 F 205 C	25 - 30
Rice Pudding (raw rice)	300 F 149 C	120 - 180

Scalloped Potatoes	350 F 177 C	60
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Pastry

1 Crust Pie (Custard Type)	400 - 425 F 205 - 218 C	30 - 40
Shell Only	450 F 232 C	10 - 12
2 Crust Pies with Uncooked Filling	400 - 425 F 205 - 218 C	45 - 55
2 Crust Pies with Cooked Filling	425 - 450 F 218 - 232 C	30 - 45

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