



Ministry of Education
and Sports

HOME-STUDY LEARNING

SENIOR
4

FOOD AND NUTRITION SCIENCE

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This material has been developed as a home-study intervention for schools during the lockdown caused by the COVID-19 pandemic to support continuity of learning.

Therefore, this material is restricted from being reproduced for any commercial gains.

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FOREWORD

Following the outbreak of the COVID-19 pandemic, government of Uganda closed all schools and other educational institutions to minimize the spread of the coronavirus. This has affected more than 36,314 primary schools, 3129 secondary schools, 430,778 teachers and 12,777,390 learners.

The COVID-19 outbreak and subsequent closure of all has had drastically impacted on learning especially curriculum coverage, loss of interest in education and learner readiness in case schools open. This could result in massive rates of learner dropouts due to unwanted pregnancies and lack of school fees among others.

To mitigate the impact of the pandemic on the education system in Uganda, the Ministry of Education and Sports (MoES) constituted a Sector Response Taskforce (SRT) to strengthen the sector's preparedness and response measures. The SRT and National Curriculum Development Centre developed print home-study materials, radio and television scripts for some selected subjects for all learners from Pre-Primary to Advanced Level. The materials will enhance continued learning and learning for progression during this period of the lockdown, and will still be relevant when schools resume.

The materials focused on critical competences in all subjects in the curricula to enable the learners to achieve without the teachers' guidance. Therefore effort should be made for all learners to access and use these materials during the lockdown. Similarly, teachers are advised to get these materials in order to plan appropriately for further learning when schools resume, while parents/guardians need to ensure that their children access copies of these materials and use them appropriately. I recognise the effort of National Curriculum Development Centre in responding to this emergency through appropriate guidance and the timely development of these home study materials. I recommend them for use by all learners during the lockdown.



Alex Kakooza

Permanent Secretary
Ministry of Education and Sports

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National Curriculum Development Centre (NCDC) would like to express its appreciation to all those who worked tirelessly towards the production of home-study materials for Pre-Primary, Primary and Secondary Levels of Education during the COVID-19 lockdown in Uganda.

The Centre appreciates the contribution from all those who guided the development of these materials to make sure they are of quality; Development partners - SESIL, Save the Children and UNICEF; all the Panel members of the various subjects; sister institutions - UNEB and DES for their valuable contributions.

NCDC takes the responsibility for any shortcomings that might be identified in this publication and welcomes suggestions for improvement. The comments and suggestions may be communicated to NCDC through P.O. Box 7002 Kampala or email admin@ncdc.go.ug or by visiting our website at <http://ncdc.go.ug/node/13>.



Grace K. Baguma
Director,
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ABOUT THIS BOOKLET

Dear learner, you are welcome to this home-study package. This content focuses on critical competences in the syllabus.

The content is organised into lesson units. Each unit has lesson activities, summary notes and assessment activities. Some lessons have projects that you need to carry out at home during this period. You are free to use other reference materials to get more information for specific topics.

Seek guidance from people at home who are knowledgeable to clarify in case of a challenge. The knowledge you can acquire from this content can be supplemented with other learning options that may be offered on radio, television, newspaper learning programmes. More learning materials can also be accessed by visiting our website at www.ncdc.go.ug or ncdc-go-ug.digital/. You can access the website using an internet enabled computer or mobile phone.

We encourage you to present your work to your class teacher when schools resume so that your teacher is able to know what you learned during the time you have been away from school. This will form part of your assessment. Your teacher will also assess the assignments you will have done and do corrections where you might not have done it right.

The content has been developed with full awareness of the home learning environment without direct supervision of the teacher. The methods, examples and activities used in the materials have been carefully selected to facilitate continuity of learning.

You are therefore in charge of your own learning. You need to give yourself favourable time for learning. This material can as well be used beyond the home-study situation. Keep it for reference anytime.

Develop your learning timetable to cater for continuity of learning and other responsibilities given to you at home.

Enjoy learning

TERM 1**TOPIC: YEAST COOKERY**

General objective: You should be able to demonstrate the skill of making yeast products.

Specific objectives:

By the end of this topic you should be able to:

- Outline the steps followed in bread making.
- State the qualities of good bread.
- Make bread.

Requirements you will need:

- Time
- Note book
- Pen pencil
- Ingredients for bread making
- Utensils/equipment for bread making

Instructions/procedure

This material has been developed as a self-study material. You can use this material at your own pace at home. You have already covered baking of other items like biscuits, cakes. Now you are going to learn bread making where we use yeast as a raising agent.

Glossary:

1. **Raising agent**-any substance added to a food product (such as dough or batter) that makes them rise when cooked.
2. **Yeast**-a tiny single-celled microorganism, which is an example of a biological raising agent used to make bread dough.
3. **Prove**- This is allowing the yeast ferment the dough and produce gasses, thereby raising the dough.
4. **Foam**-these are gas bubbles that lighten(s) and soften(s) (the mixture formed on) the surface of the mixture of yeast and water.

Lesson 1: Steps followed in bread making**Specific objectives:**

By the end of this lesson, you will be able to:

- Outline the steps of bread making.
- State the qualities of good bread.

Introduction

When you are making bread, yeast is used as raising agent. Yeast converts sugar into alcohol and carbon dioxide. The carbon dioxide produced expands and raises bread. The alcohol produced is responsible for the characteristic smell of fresh bread. Yeast is a unicellular organism which reproduces by budding. For yeast to work appropriately the following are essential:

- Warmth or a temperature of 28°C-30°C
- Food in form of sugar
- Moisture or water

Basic Bread mixture

300gms plain flour

1 levelled teaspoon dried yeast/instant yeast

200ml warm sugar

1 pinch of salt

1 tablespoon fat (e.g. Kimbo, Margarine)

1 egg for glazing

Time: 1: 40 minutes

General steps of bread making

1. Place the warm water into mixing bowl,
2. Add yeast and stir slowly until it dissolves (if using dried yeast)
3. Add the sugar and salt and stir until all dissolve completely
4. . Cover with a damp piece of cloth/if you are not using instant yeast.
5. Put it in a warm place until it sponges/foams on the surface.
6. Add the flour and knead until smooth elastic dough has been formed.
5. Cover the bowl with a damp cloth and leave it in a warm place (prove) for 30 minutes. The dough will increase in size, become soft and makes a loud noise.
6. After proving, knead the dough for a few minutes to break the bubbles of carbon dioxide gas and spread the carbon dioxide evenly and shape as desired.
7. Prove it again for about 15 minutes.
8. Glaze with a beaten egg put on a greased baking tin and bake in a hot oven, (preferably) 230°C.

State the qualities of good bread

You have tested different types of bread. What are the qualities of good bread?
To make good quality bread the following rules must be observed:

- You must use fresh yeast, always check expiry date and do not use yeast that has been left open for long added in correct proportions or amounts
- The flour used must be strong flour (should have enough gluten)
- The mixing and kneading must be thoroughly done to distribute the yeast properly and develop the gluten well.
- Warm conditions must be used e.g. warm water or warm environment for proving the bread dough. If the water used is too hot, the yeast will be killed and if it is cold, the yeast will be dormant or inactive.
- The sugar and salt used should not be a lot or else the yeast will be killed
- Proving must be done carefully i.e. if too short the bread will not be light (will be heavy or sad) and if over proven, the bread becomes sour.

Qualities of a well baked bread

- Crust-light brown and tender
- Air pockets – big
- Interior- glossy, soft and firm
- Aroma – a nice yeasty smell
- Uniform shape
- Fully risen shape

Activity 1:

At your home check the food store for some bread or a bun. Pick one slice and observe its color, texture, lightness and taste. Identify what makes it to be good bread and write it in your notebook.

Summary:

In this lesson you have discovered steps followed in bread making and the qualities of good bread.

For yeast to work well the following must be provided:

- Warmth or a temperature of 28°C-30°C
- Foods in form of sugar
- Moisture or water is needed.

For good quality bread the yeast must be fresh and the dough should be kneaded well to develop gluten.

Lesson 2: Make bread**Specific objectives:**

By the end of this lesson, you will be able to make bread.

Activity 2:

Use one of the recipes below to make a yeast product at home.

Write down the qualities of your bread as compared to the one bought at the shop.

Hint: You can make doughnuts if you do not have baking facilities at your home.

Here are some recipes of the different yeast products

Brown bread

150 gms plain flour

150 gms whole meal flour

1 levelled teaspoon instant yeast

200ml warm water

1 teaspoon fat

1 teaspoon salt

1 dessert spoon treacle

Timed: 1 ½ hours

Method

1. Sieve yeast and flour together
2. Rub in fat
3. Add sugar
4. Mix the warm water into the mixture
5. Knead until smooth and elastic
6. Put in a greased polythene bag and place in a warm place to prove for 45 minutes until the dough doubles in size.
7. Re-knead to spread the carbon dioxide and shape into desired shape into a greased baking tin and glaze with an egg.
8. Prove it again for about 15 minutes
9. Bake in a hot oven 230°C/450°F for 30 minutes.
10. Cool, preferably on a rack and serve with a drink.

Dough nuts

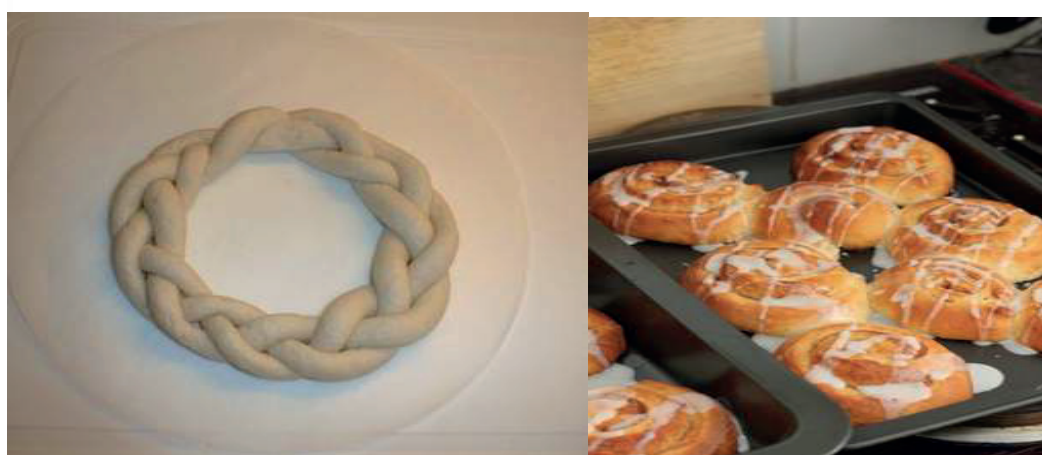
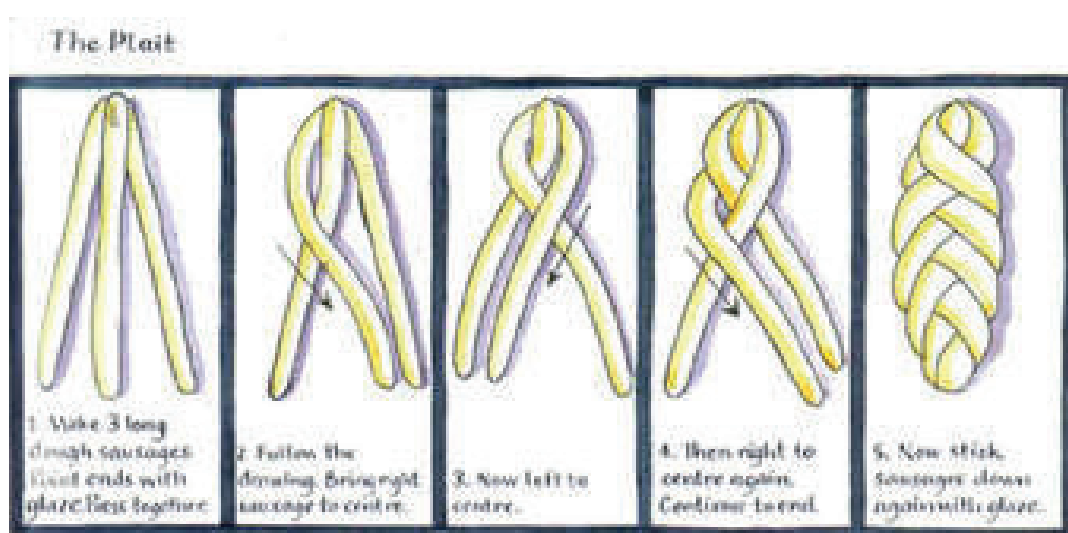


- 100g wheat flour
- 1 tablespoon sugar
- 1 tablespoon margarine
- 2 tablespoons sugar
- $\frac{1}{4}$ teaspoon cinnamon to roll them in (optional)
- 1 level teaspoon yeast
- $\frac{1}{2}$ egg
- 2 tablespoons milk
- Time needed: 1 $\frac{1}{2}$ hours

Method

1. Warm the milk
2. Mix flour, sugar, yeast and rub in the fat (margarine)
 - Follow the same procedure as for the basic bread recipe.
 - The dough is rolled and cut into rounds, cut the middle part using an empty soda/mineral water bottle.
 - Fry the doughnuts in hot cooking oil until golden brown and serve well garnished as desired.

Fancy Bread Rolls



Time needed: 1 ½ hours

- 250g wheat flour
- 2 leveled tablespoons margarine
- 1 leveled tea spoon Instant Yeast
- 1 leveled table spoon sugar

- Pinch of salt
- Warm water

Procedure;

1. Sieve flour into a mixing bowl and rub in the margarine.
2. Add the sugar, salt and yeast and mix well.
3. Add the warm water and mix into soft dough.
4. Knead the dough for some time to develop the gluten until the dough becomes less sticky.
5. Prove the dough in a warm environment for 30-45 minutes or until enough carbon dioxide has been produced.
6. The dough will increase in size become soft and makes a loud noise when hit. Proving can be done either under the sun/warm place or by placing the dough in greased polythene bag and immersing it in warm water.
7. Re-knead the dough for a few minutes to break bubbles of carbon dioxide gas and spread them evenly. Shape the above mixture into rolls or fancy shapes like plait, shell, Catherine ring, twist, S-shape, single knot.

Chelsea buns



250g wheat flour

1 tablespoon of sugar

½ level teaspoon salt

1 teaspoon of instant yeast

1 tablespoon margarine

1 ½ level teaspoon mixed spices

Fillings

50gms currants or sultanas or raisins

50gms margarine

50gms sugar

½ teaspoon mixed spices

Time needed: 1 ½ hours.

Method

1. Follow the basic method to the first proving.
2. After the dough is risen, re-knead the dough and roll into a rectangle 1 cm thick".
3. Melt and spread the melted margarine onto the surface, sprinkle the sugar and mixed spices.
4. Roll the dough tightly, pressing the long edge firmly.
5. With a knife, cut 10 to 12 slices
6. Arrange them on a greased baking tin.
7. Prove for 30 minutes and bake them at 230°C/ 450°F, or gas no 8 for about 20 minutes.
8. Brush them with a bun wash made by milk/water, then back in the oven for 2 – 3 minutes to dry.

Summary:

In this lesson you have followed steps in bread making. You have also found out the qualities of good bread. You have also learnt to make other yeast products. These can be used at home as snacks, accompaniment to tea and soups, packed meals.

TOPIC: COOKING FOR SPECIAL OCCASIONS**Specific objectives:**

- a) List the type of party meals; e.g. buffet, cocktail, dinner and luncheon.
- b) State examples of dishes, organization and setting for each
- c) List the occasion when we pack meals
- d) List the dishes suitable for packed meals
- e) Name the materials suitable for packing meals
- f) Outline the importance of snacks

Lesson 1: Party meals, examples of dishes, organization and setting for each.**Specific objectives:**

By the end of this lesson, you will be able to:

- a) List the type of party meals; buffet, cocktail, dinner, reception and luncheon.
- b) Name examples of dishes, organisation and settings for party meals

Materials you need:

- A notebook
- Pen and Pencil
- Time
- Good learning environment

Instruction/Procedure

This material has been provided to help you study at your own pace at home. Find a suitable time and place where you will not be disturbed to read through this material. Remember to attempt all the activities that are provided. Some of them may require that your parents provide ingredients for you. Please ask for their support whenever it is required.

Introduction

In the previous lesson you learnt about meal planning and the different types of meals. In this topic you will learn the types of party meals. You will also learn

about packed meals and when they are served. The dishes and materials suitable for packed meals will also be learnt.

A **buffet** is a consisting of several dishes where the guests serve themselves. It is an ideal party arrangement for teenagers and young adults.

A **cocktail party** is a party, usually held in the early evening, where cocktails or other alcoholic drinks and simple foods, such as hors d'oeuvres and other finger foods are served. Guests often dress formally for the party. The guests usually eat while standing. This takes a short time.

Dinner usually refers to the largest and most formal meal of the day, which is eaten in the evening.

Luncheon is a formal event held at midday for a large group of people where a meal is served.

Organisation and setting of buffet, cocktail, dinner and luncheon respectively



Activity:

With reference to the pictures, do you observe a difference in the setting and organization of dishes? Write them in your note book.

Summary

In this lesson, you have learnt the types of party meals and the examples of dishes to be served at parties.

Lesson 2: Packed meals

Specific objectives:

By the end of this lesson, you will be able to:

- a) Identify the occasions when we pack meals
- b) List the dishes suitable for packed meals
- c) Name the materials suitable for packing meals

Materials you need:

- A notebook
- Pen and Pencil
- Time
- Good learning environment

Introduction:

A packed meal is a meal prepared at home and carried to be eaten elsewhere; such as school, workplace, an outing or picnic.

Bear in mind the following points as you pack meals:

- Choose a variety of filling and nutritious foods from all the food groups and avoid empty-calorie snacks.
- Choose healthier homemade foods than shop prepared ones.
- Include drinks rich in vitamin C.
- Choose foods that don't spoil easily.
- Choose foods that are handy and do not require a lot of cutlery
- Pack sufficient foods for the dietary needs of each person depending on the age, gender, occupation, health status.
- Include a variety of flavours, colours and textures. Choose suitable packaging.

Suitable dishes

The dishes that you choose to pack should suit the person that you are packing for. Consider the points above when planning packed meals.

Some packed dishes:**Activity:**

With the background knowledge of nutrients that you have learnt, list the dishes that would be suitable for packing.

Can you identify the dishes in the picture above?

Plan a packed meal for a secondary school going student who is in day school.

Materials suitable for packing meals

Materials used for packing meals should be light, easy to carry and not breakable. Examples of materials for packing include; plastic lunch boxes, insulated picnic boxes, cling film, aluminum foil, greaseproof paper, plastic bottles and containers, vacuum flasks, polythene bags.



Summary:

In this lesson you have learnt that packed meals enable one to eat even away from home. They should be balanced; varied in colour, texture and flavor. Packed meals should be easy to carry and eat without spilling or getting spoilt easily.

The dishes should be suitable for the person. You should also pack meals in containers that are light to carry and do not break easily.

Specific objective:

By the end of this lesson, you will be able to outline the importance of snacks

Materials you need:

- A notebook
- Pen and Pencil
- Time
- Good learning environment

Snacks are small amount of food eaten between meals. Snacks are important in the diet because they;

- can provide energy in the middle of the day or when you exercise.
- can also decrease your hunger and keep you from overeating at meal time.
- Eating a snack is better than letting yourself become so hungry. This can lead to poor food choices and excess calorie intake.

Examples of snacks include: drinks like yoghurt, beverages, fruit drinks, milk, milkshakes, fruit fools

Savory snacks like samosas, pies, chapatti, eggs, vegetable salads, cheese scones, balls, fingers straws, potato croquettes, baggia, fried mukene (silver fish) and crisps

Sweet snacks like cakes, biscuits, doughnuts, Chelsea bun, and daddies

Seeds and nuts like ground nuts, soya beans, popcorn

Summary:

In this lesson, you have learnt the different types of special meals and examples of dishes that can be prepared for these meals

TOPIC: ECONOMY IN THE KITCHEN

Specific objectives:

By the end of this lesson, you will be able to:

- Identify the factors to consider when budgeting.
- Use time and motion study in the daily activities

Requirements you will need:

- Time
- Note book
- Pen/ pencil

Instructions/procedure

You have already covered some other topics and practical work. Before you do any shopping for ingredients for use while carrying out practical work, you should be able to plan and budget for the requirements.

Glossary:

Budgeting- is the process of creating a plan to spend your money

Budget-is a plan for your income and expenses

Expenditure-is the act of spending money or time and it is something on which you spend money.

Dovetail- doing several activities that rhyme together at the same time.

Lesson1: Budgeting

Identify the factors to consider when making a budget.

Introduction

When you budget, you get a clear picture of where your money is going each month. **Budgeting will help you achieve the goals you are working toward preparing healthy and affordable meals.** Budgeting for your family and actively managing your money, can allow you to plan and save for the future. It will give you peace of mind and allow you to avoid debt.

Food is the largest expense in the budget of a low income worker. While for a high income earner it is a small expense.

Activity 1:

- Can you think of some points to consider when budgeting?

- What steps would you follow when budgeting and shopping for the family food items?
- Make a shopping list for your daily needs at home.

Shopping list

No.	Item	Quantity	Unit cost	Total cost

Importance of a budget

Budgeting helps you in comparing various items and save for the future. You can develop goods bargaining power for different items. A budget keeps you free from financial worries and anxieties. It helps you to live within your means of income. It encourages you make a conscious decision. A budget is very helpful where there is scarcity of money. Members of the family understand their responsibilities in storing income. The family budget provides the family a record of expenditure for future use. The greatest advantage is that it makes the family healthier and happier with its means. Budgeting facilitates adjusting irregular income to regular expenditure. With your budget you can identify the unnecessary and extravagant expenditure. A budget determines how a family can use all its resources. Budgeting helps in the proper distribution of family income for satisfactory living.

Use time and motion study in the daily activities

Using your time effectively will help you to achieve your target. Ask yourself, the tasks you have to accomplish in the day. How much time does each task require? Which is the most difficult task? What would you do to achieve the day's work? Make a list of things you are going to do. Write your list in your time plan considering your priorities. Be specific by listing activities you can complete in a day. The movements must be planned to save time and energy. This may involve dovetailing.

2: Time plan

Plan a day's meal for the family. Show the different activities to be followed during the preparation on a time plan.

Time	Activity and procedure	Special points

Summary:

In this lesson you have learnt to budget for family meals

TOPIC: RECHAUFFE COOKERY**Lesson 1: Rules for making rechauffe dishes****Specific objectives:**

By the end of the lesson, you should be able to; state the rules for making rechauffe dishes

Requirements you will need:

- A notebook
- Pen and Pencil
- Time
- Good learning environment
- Leftover foods to make rechauffe dishes
- Equipment to use in cookery

Instruction/Procedure

This work has been designed as a self-study material for you to learn the subject matter at your own pace. You should work out the material at a time that is suitable for you at home. You are free to consult your parents and other family members on some of the practical aspects. Your parents may need to provide for you some of the ingredients that are not available at home.

Introduction

In the previous lesson, you discovered the importance of budgeting at home. You learnt how to economize materials used in a home including foods that remain after a meal. A rechauffe dish is one way in which family members save money spent on food. By using leftover foods, you can come up with very interesting dishes that you will enjoy. Left over foods should be handled well to avoid contamination.

Reasons for rechauffe cookery to;

- prevent wastage/spoilage
- cut down on cost
- provide variety in the family menu
- develop new dishes

Examples of rechauffe dishes

Kedgeree, rice/potato/yam/bean balls, potato/chicken/meat rollovers, potato cake, potato salad, fish cakes, meat/potato crouquettes, rissoles, meat loaf, meat/chicken soup, trifle, meat/peas/beans/rice/spaghetti samosas, duchess potato, pies,

Rules for making rechauffe dishes

- Store up left over foods well to avoid contamination
- Do not keep leftover foods warm for long as they get spoilt easily
- Any additional ingredients like onions should first be cooked before adding to rechauffe dishes
- Add some moisture to the rechauffe dish so that it is not too dry
- Serve rechauffe dishes with fruits and vegetables to provide vitamins that may be lost due to reheating
- Serve rechauffe dishes with crisp foods like fresh vegetables to give bite to soft foods

Activity:

Make use of any leftover foods at home to make at least 3 interesting rechauffe dishes. Write down your recipe in your note book.

Draw a table and fill in with name of leftover food and examples of rechauffe dishes made.

Name of leftover dish	Name of rechauffe dish

Summary:

In this lesson, you have learnt the different ways of using leftover foods to make interesting dishes

Leftovers are foods that remain unconsumed at the end of a meal which are eaten later.

TOPIC: FOOD SPOILAGE AND POISONING

Sub-Topic: Food and Kitchen Hygiene

Specific objectives:

- Distinguish between food contamination and food spoilage
- Explain the factors affecting the growth of micro organisms
- Explain the hygienic food handling procedures of various foods

Lesson 1: Food contamination, spoilage and factors affecting the growth of micro organisms

Specific objectives:

By the end of this lesson, you will be able to:

- Distinguish between food contamination and food spoilage
- Explain the factors affecting the growth of micro organisms

Requirements you will need:

- Note book
- Pen
- Pencil
- Time
- Conducive environment
- A selection of food items to establish food spoilage

Instructions/Procedures

This material has been provided to help you study at your own pace at home. The material has some activities which you are expected to read through carefully and attempt all of them. You may need more than 1 hour for some activities therefore create some time for it. Find a suitable place where you will not be disturbed to read through this material. You need to collect food items for some of the activities.

Introduction

In the previous lesson you learnt about rechauffe dishes and how to handle them to avoid contamination. It is important to observe hygiene when handling food in the kitchen. This avoids food contamination, spoilage and poisoning.

Food contamination refers to the presence of harmful chemicals and microorganisms in food which can cause consumer illness.

Types of food contamination include; biological, physical, chemical and cross contamination.

Cross contamination is when the bacteria are transferred onto food that is ready to eat from other foods, cutting boards, utensils, etc., if they are not handled properly. It is also caused by poor handling of food. For example, if raw meat comes into contact with cooked chicken.

Hint: Food contamination by microorganism may not be visible while in food spoilage you can observe the changes.

Food spoilage is the process where the food becomes unsuitable to eat by the consumer.

Signs of food spoilage

This may include changes in colour, texture, unpleasant odour and undesirable taste. The item may become softer than normal and if moulds occur it is often visible externally on the surface.

Activity 1.1

Step 1

Make a selection of the following foodstuffs; leftover beans, a slice of bread, a piece of cassava, a tomato, and sweet bananas.

Step 2

Provide suitable conditions that allow growth of microorganisms.

Step 3

Observe the changes that take place from day 2 up to day 7. Write them down in your notebook.

Follow up activity: You can try this with other foodstuffs in your home and note down your observations.

Microorganisms include bacteria, moulds, fungi and virus. The factors that favour the growth of microorganisms include;

Food

All microorganisms need adequate supply of food in a suitable form. Liquids or semi-liquids such as milk, broth and jelly are an ideal media for growth of bacteria.

Temperature

Most bacteria survive between 30-40°C. Most bacteria are destroyed at temperatures above 60°C and all are destroyed at 100°C. Many spores survive boiling and may require temperatures over 140°C to destroy them.

pH

The pH varies according to the species of the bacteria and this is between 6.5-7.5. Some microorganisms like high pH levels but if conditions are too acidic their enzymes break down.

Moisture

Moisture is required for normal metabolism. They require some level of water and some cannot survive in low moisture conditions.

Oxygen requirements

Microorganisms require oxygen for metabolism. Some use oxygen when it is available but can also grow without oxygen.

Darkness

Microorganisms multiply well in dark and damp places. Fresh air and sunlight destroy microorganisms and they have a sterilizing effect.

Summary

In this lesson, you have learnt that food contamination is when food contains harmful chemicals and microorganisms which can cause illness if eaten.

Food spoilage is the process by which food becomes unsuitable for eating.

The conditions that favour growth of microorganisms are; food, temperature, moisture, pH, darkness and oxygen.

Lesson 2: Hygienic food handling procedures of various foods

Specific objectives:

By the end of the lesson, you should be able to; explain the hygienic food handling procedures of various foods

Requirements you will need:

- Note book
- Pen
- Pencil
- Time
- Conducive environment

Introduction

You can prevent most food borne disease with proper food handling and good practices of hygiene. Food hygiene are conditions and measures necessary to ensure the safety of food. Safe steps of food handling, cooking and storage are essential in the prevention of food borne illness.

The hygienic food handling procedures of foods involve personal hygiene practices of the food handler and food safety.

Personal hygiene practices

- Uniforms and aprons should be clean at the beginning of cooking.
- Wear a head gear to keep hair away from food
- Keep finger nails short and clean, not varnished.
- Avoid touching nose, mouth, hair and skin during food preparation.
- Do not smoke in food premises
- Do not sneeze directly on the food.
- Wash and dry hands thoroughly before handling food.
- Wash and dry them during work using a clean towel or disposal towel.
- Do not taste foods with utensils used to stir or mix food
- Cover cuts, wounds and sores before handling food

Food safety handling:

- Wash and sanitize utensils before serving
- Cover all raw and cooked foods

- Frozen foods should be thoroughly thawed and cooked
- Avoid over handling of foods
- Clean the work surfaces thoroughly to avoid cross contamination
- The kitchen should be well ventilated and lit
- The floor and the walls should be easily cleaned
- Handle foods well, use tongs if available
- Foods should be eaten as soon as possible after preparation

Activity:**Summary:**

In this lesson, you have discovered that;

Hygienic food handling procedures involve personal hygiene practices of the food handler and food safety.

Proper procedure of food handling, cooking and storage are required in the prevention of food borne illness.

Glossary:

Microorganism-

Food handling-

Food safety-

Food borne illness-

Hygiene-

Food hygiene-

Personal hygiene-

TOPIC: FOOD SPOILAGE AND FOOD POISONING**Specific objectives:**

Name the causes of food spoilage and food poisoning

State the various ways of preventing food spoilage and poisoning

Lesson 1: Food spoilage and food poisoning

By the end of the lesson, you should be able to;

- identify the causes of food spoilage and poisoning
- state the various ways of preventing food spoilage and food poisoning

Study requirements you will need:

- Note book
- Pen
- Pencil
- Time
- Conducive environment

Instructions/Procedures

The self-study material has some activities which you are expected to do. Read the material carefully and attempt all the activities. You are free to consult the internet, family members and text books if you have.

Introduction

In the previous lesson, you covered the definition of food spoilage. Kitchen and food hygiene are important during food preparation.

Food spoilage is caused by many factors such as;

Micro-organisms -insects

chemical reactions -air and light

- parasites - rodents
- physical damage - enzymes
- temperature and time

Hint: The main cause of food spoilage is invasion by microorganism such as fungi and bacteria.

Food poisoning (food borne illness) is an illness caused by eating contaminated food. The person may get symptoms like abdominal pains, vomiting, diarrhea and fever. This may happen 24 hours after eating the contaminated food.

Many bacterial, viral and parasitic agents cause food poisoning. Infectious organisms or their toxins can contaminate food at any point of processing or production.

Most often food poisoning is mild and resolves without treatment, but some people need to go to hospital.

Activity: Prevention of food spoilage and food poisoning

Identify the different ways in which you would prevent food spoilage and poisoning. Write these in your note book.

Summary;

Food poisoning is an illness caused by eating contaminated food. Bacterial, viral and parasitic agents cause food poisoning. Its symptoms are abdominal pains, vomiting, diarrhea and fever.

Food spoilage is caused by factors such as; micro-organisms, insects, chemical reactions, air and light. Others are parasites, rodents, physical damage, enzymes, temperature and time.

TOPIC: KITCHEN PLANNING AND ARRANGEMENT

Specific objectives:

- State the factors to consider when planning a kitchen
- Draw the layout of the different kitchen plans
- Explain the importance of good lighting and ventilation in the kitchen
- State the different ways of disposing off kitchen refuse

Lesson1: Kitchenplan and layout

In this lesson you should be able to;

- State the factors to consider when planning a kitchen
- Draw the layout of the different kitchen plans

Materials you will need:

- A note book
- Pen and pencil
- Ruler
- Rubber

Instructions/procedure

You have been provided with this self-study material to help you learn at home. Find a suitable place and time to read this material. Attempt all activities given. Remember that some activities may need more than 1 hour to complete them. Follow the instructions that you have been given carefully before doing each activity.

Introduction

A kitchen is where food is stored, prepared and cooked and so it needs to be planned well.

A kitchen involves arrangement of different major areas where activities are carried out. What are some of those activities?

The kitchen is the busiest place in a home because the activities of the entire household revolve around it. Therefore, its relation to other areas is very important.

When you are planning a kitchen, aim at saving as many steps as possible while moving from one work place to another. Decrease the amount of time you work in the kitchen. Can you think of the major areas which are found in kitchens? What is a kitchen triangle?

Factors to consider when planning a kitchen

- Consider ways to save time and energy when planning the main work centres.
- Provide adequate space for normal activities in the kitchen and allow a comfortable movement of at least two people working in the same kitchen.
- Ensure enough work space or counter area to facilitate food preparation. These are usually covered with heat proof material.
- Ample storage space on the work centre level e.g. built in cupboards below with drawers. Cupboards above work level are useful but must not be too high.
- The work centre should be at a comfortable height, usually one metre above the floor.
- Safety and comfort should be a major consideration. Organize work centres so that there will be minimum discomfort and fatigue.
- There should be adequate lighting of the right intensity. There should be enough light in the day and night. Each work centre must be well lit for activities that go on there.
- The room should be well ventilated to keep it fresh and free from cooking smells.
- The surfaces should be easy to clean and heat proof.
- There should be provision for waste disposal in and outside the kitchen.
- The overall appearance should be clean, fresh and cheerful.
- When equipping the various areas of the kitchen, remember there should be a proper place for everything.

Activity 1: Planning a kitchen

Your parents are planning to construct a new home; they have requested you to share with them ideas to consider while planning their kitchen.

What suggestions would you have for them? Write them in your book.

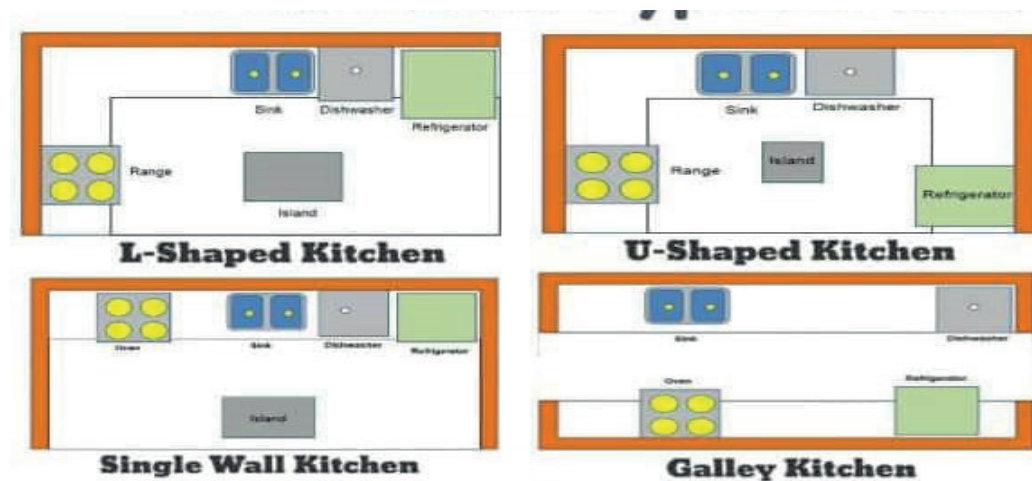
Kitchen layout:

The sequence of areas in the kitchen is from storage area to work surface to wash up area then cooking area and vice versa. The work areas may be more in a kitchen lay out depending on the space available.

The kitchen plans make up different shapes which are named according to letters in which they come up, they include, L shape, U shape, linear shape and parallel.

Kitchen lay outs

Usually the efficiency of the kitchen is influenced by the shape as this determines the arrangement of work centres. The shapes commonly used for kitchen plans include one wall plan, corridor plan, L- plan and U- plan.



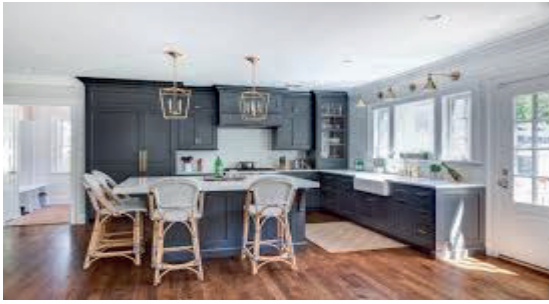
One wall plan

This type of kitchen is suitable where space is limited for instance in one room flat. The work flows in a straight line from the work centres i.e. the storage, work area, the washing area and cooking area.



L- Shaped kitchen lay out

This is suitable where there is plenty of space. Equipment is arranged on the two adjoining walls and so quite close to each other.



U shaped

A U-shaped kitchen design features three walls that are lined with storage areas and appliances. It is an efficient design that frees up kitchen space. It has an efficient work triangle and is considered the most convenient arrangement.



Corridor /Parallel lay out

The corridor consists of two walls arranged in a corridor shape with both ends of the corridor open.



Lesson: 2 Lighting, ventilation and kitchen refuse

Specific objectives:

- Explain the importance of good lighting and ventilation in the kitchen
- State the different ways of disposing off kitchen refuse

Home ventilation is important;

To keep the house and its occupants healthy and comfortable

For elimination of humidity and cooking fumes

Ventilation keeps air flowing through the home, eliminating contaminants, moisture build up and odours.

Keeps carbon dioxide levels low in the house and prevents headache and fatigue

Glossary

- Kitchen
- Kitchen lay out
- Work triangle

References

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