SIGMA TERM (2nd)

FOOD AND NUTRITION

SSS 1

SCHEME OF WORK FOR SIGMA TERM

1. Revision scientific study of foods.

1. Measurement: units of measurement.
2. Effects of heat on food.

2. Food tests (tests for carbohydrates, protein and fats),

- The food composition table.

- Meal planning.

3. Reproductive health.

4. Reproductive health –malnutrition e.g. Over nutrition and under nutrition.

5. Kitchen management.

6. Kitchen plan/ layout.

7. Kitchen equipment.

- Materials used in making kitchen equipment.

8. Cleaning agents and abrasives.

9. Safety in the kitchen.

1. Methods of handling kitchen equipment properly, precautions to prevent accident.
2. Contents and use first aid box.
3. Treatments of simple injuries e.g. Cuts, burns and scalds.

10. Hygiene.

1. Personal- rules of personal hygiene in the kitchen.
2. Kitchen hygiene rules.

11. Revision.

12. Examination.

**WEEK 1**

**TOPIC:** Scientific study of food

**CONTENTS;**

*Units of measurement*

Energy value of food can be measured in *calories or joules* but a large unit of energy is measured in *kilo-calories*. It is the most common unit of measuring energy. The international unit of energy is *“joule*”. Therefore kilocalories is the amount of heat required to rise the temperature of a thousand gram (1000) of water by 1 degrees Celsius. For example one gram (*gm.*) of carbohydrate will produce four kilocalories of energy. One gram of protein will produce four kilocalories of energy and one gram of fat will produce nine kilocalories of energy.

Food weight: the raw or processed food can be measured in grams or kilograms.

1000 grams = 1 kilogram.

The macro nutrients are measured in grams while the vitamin and trace elements are measured in smaller units because they are required in relatively small quantity by the body and are also present in food in a small quantity.

Vitamins and trace elements are measured in milligrams (mg.) and micrograms ( g.).

1g = 1000mg (103mg)

1gm = 1 000, 000 g (106 g)

Or

1mg = 0.001 or 10-3gm

1 g = 0.000001gm or 10-6gm

Other units often used in measuring vitamins are the international unit (I.U) and standard unit (S.I).

EFFECTS OF HEAT ON NUTRIENTS

Effects of heat on carbohydrates

1. They are dextrinized i.e. broken down into simpler units and therefore easier to digest.
2. In moist heat, carbohydrates gelatinize i.e. they expand and burst and thereby making them more digestible.
3. They caramelize i.e. turn brownish. This is usually produced with dry heat.

Effects of heat on proteins

1. Heat denature protein i.e. it alters the primary structure and state of the native protein e.g. egg, beans.
2. The protein contracts and the food shrinks e.g. meat.
3. If the protein is overcooked it becomes tough and indigestible e.g. fried fish.

Effects of heat on fats and oil

1. Fat changes from solid state to liquid state when heated.
2. When oil is heated to a temperature of between 2000 -2100 F, the oil produces a blue haze which signifies the smoke point, at the “smoke point”, the oil may catch fire.
3. When the oil is heated beyond smoke point, it decomposes to produce a poisonous substance known as *acrolein.*

Evaluation: mention the various measurements used for food stuffs

* What is the measurement of energy value of carbohydrates and vitamins.
* State the effect of dry heat on carbohydrates.

Assignment: state the metric equivalent of the following; a. evaporated milk

1. Satchet fat c. a gallon of vegetable oil d. a bag of rice
2. A pack of spaghetti

**WEEK 2**

**TOPIC:** food tests

**CONTENTS;**

IDENTIFICATION OF FOOD NUTRIENTS

**Carbohydrates**

1. Iodine test: cut a section of carbohydrate food to expose the flesh. Then pour drops of iodine on the exposed flesh. If it turns black or darkish brown, it shows the presence of carbohydrate. If it remains light brown, then carbohydrate is absent.
2. Litmus test: this is another simple experiment to detect the presence of carbohydrate in any food substance. The food item is peeled if it has any bark.it is then grated and made into a paste. Red litmus paper is immersed into the paste, if it turns blue it shows the presence of carbohydrate but if it remains unchanged, it does not contain any carbohydrate.

**Proteins**

1. Foam test: a very simple test for the presence of protein, is todissolve the food substance in water and shake vigorously. If a foam is produced, it shows the presence of protein. Absence of foam indicates that the food substance does not contain protein.
2. Alcohol test: alcohols have a coagulating effect on proteins. Thus if a food product or its solution coagulates, shrinks or curdles when immersed in alcohol, it shows that food is proteineous. In the case of meat apart from shrinking, its color also changes to brown.
3. Million’s test: million’sreagent may be used to detect the presence of protein in foodstuffs. A solution of the foodstuff is warmed with million’s reagent (which contains mercurous and mercuric nitrates in nitric acid). If protein is present, a white precipitate which later turns red is obtained. The only common protein which does not give a positive result with this test is gelatin.

**Fats**

Blotting paper test: the presence of fat in any foodstuff can be detected bygrinding a small quantity of foodstuff between two pieces of blotting or filter paper. If after grinding, the paper or some portion on it becomes translucent or greasy, it shows the presence of fats or oil in the foodstuff. If not, it indicates the absence of fat.

FOOD COMPOSITION TABLE

Food composition table is a table that shows in a tabular form the nutritive value (amounts of nutrients) of common food commodities be they raw, processed or cooked.

A food composition table serves many purposes. The purposes are as follows.

1. Gives ready and useful information about the nutritive values of the major food commodities thereby preventing misinformation of consumers by processors and marketers of food.
2. It is used to compare the food values of one food with another and helps consumers to choose foods according to their needs.
3. It is used for planning meals which meet specific needs for specific groups of people such as infants, adolescents, aged etc.
4. It is used to calculate the nutritional contents of food with a view to comparing them with standards in order to determine whether a food meets Recommendation Daily Allowance (RDA) for nutrients or not.

The food composition table is affected by the following factors:

1. The nature and type of the soil used to grow the commodity.
2. The variety of the plant or breed of the animal.
3. The age of the animal will affect the composition of meat and milk obtained from them.
4. The type of feed given to animal and poultry livestock will also affect the composition meat, milk and eggs from these animalsand birds.
5. The climatic condition during the growth of plants.
6. The handling and storage methods.

Evaluation: state the purposes of the food composition table

* State the disadvantages of food composition table

Assignment: Read Meal planning

**WEEK 3**

**TOPIC:** Reproductive health

**CONTENTS;**

REPRODUCTIVE HEALTH: RELATIONSHIP BETWEEN REPRODUCTIVE HEALTH AND NUTRITION

Reproductive health is a state of complete physical, mental and social well-being and not merely the absence of reproductive disease or infirmity.

Reproductive health deals with the reproductive processes, functions and systems at all stages of life while nutrition is the sum total of the processes involved in taking in and utilization of food substances by which growth, repair and maintenance of the body are accomplished. It involves ingestion, digestion, absorption and assimilation.

Nutrients are stored by the body in different forms and drawn upon when the food intake is not sufficient.

* For both men and women, optional nutrition plays a key role in reproductive health. Maintaining a healthy weight is also important, as being over or underweight can alter a woman’s hormone levels.
* Eating a balanced diet is an important factor in achieving in vegetables, fruit and “good” fats and low in “bad” fats such as saturated and Trans fat and a “bad” carbohydrates such as sugary food, white bread etc. can promote reproductive health. In addition, prenatal vitamins provide essential nutrients which can help improve a woman’s chance for conception and assure proper development of the embryo early in pregnancy.
* For perspective fathers, healthy eating helps improve the chances of success.

**WEEK 4**

**TOPIC:** Reproductive health [contd]

**CONTENTS;**

MALNUTRITION

Malnutrition refers to the imbalance of nutrient intake due to the There are two side of malnutrition.

1. Under nutrition: this refers to a condition resulting from an inadequate intake of food or poor utilization of nutrients in food.
2. Over nutrition: this results from excessive consumption of one or more of the nutrients to the detriment of the proper functioning of the body system.

Evaluation: Differentiate between over and under nutrition with specific examples.

* What is the relationship between reproductive health and nutrition

Assignment: draw and label both male and female genital organs

**WEEK 5**

**TOPIC:** kitchen management

**CONTENTS;**

Kitchen management

KITCHEN

A kitchen can be described as the domestic workshop in the home where all the preparation, cooking and serving of food is done. There are two types of kitchen **1**. Family kitchen. **2.** Industrial kitchen.

Family kitchen: a family kitchen can be traditional or modern. The industrial kitchen is the type of kitchen found in hotels, universities, colleges and hospitals. This type of kitchen is often larger than family kitchen and the facilities needed or used are majorly mechanical and electrical. Also this type of kitchen is more equipped than family kitchen

The size of the kitchen depends solely on:

1. Size of the building.
2. Family size.
3. The financial or economic status of the family.
4. The equipment to be used.

DIFFERENCES BETWEEN TRADITIONAL KITCHEN AND MODERN KITCHEN

|  |  |
| --- | --- |
| Traditional kitchen | Modern kitchen |
| 1. It is detached from the main building. | The modern kitchen is within the building. |
| 1. Poorly ventilated because of the small windows | Well ventilated. |
| 1. Its floor is made up of mud. | The floor is made of concrete or tile. |
| 1. Sources of fuel are charcoal, firewood or sawdust. | Source of fuel is gas or electricity. |
| 1. The walls are built with mud and the roofs are made up of bamboo and palm fronds. | The walls are made up of concrete and the roof is made up of zinc. |

FACTORS TO BE CONSIDERED WHEN PLANNING A KITCHEN

A well planned kitchen is needed in the home for ease and comfort ability. The following are important factors to consider:

1. FLOOR: the floor should be made of concrete, non-slippery and easy to clean. It should also be non-absorbent of grease, not easily discolored by hot utensils. It should be reasonably resilient.
2. WALL: it should be strong, durable, impervious and easy to clean.
3. VENTILATION: a good ventilation makes the kitchen comfortable to work in therefore adequate provision should be made for cross ventilation to get rid of heat generated during the cooking process. It helps to prevent undesirable odor and high humidity.
4. WATER SUPPLY: there should be constant water supply in the kitchen for ease in working and cleaning the kitchen. A good drainage system both within and without will prevent development of offensive odor around the kitchen or contamination of food. The drainage system should be accessible to repair and clean.
5. LIGHTENING SYSTEM: this should be either artificial or natural light from the sun, while the artificial is from electricity. The florescent light is more suitable for the kitchen because it does not generate heat or cast shadow. Never use colored lights.
6. COLOR SCHEME: it should show good taste and blend with equipment.
7. Arrangement of fixed equipment and storage facilities should prevent fatigue in the kitchen.

**ADVANTAGES OF A WELL-PLANNED KITCHEN**

1. It is comfortable to work in.
2. It saves time.
3. Accidents are prevented.
4. It is easy to keep clean.
5. It reduces fatigue.
6. Equipment last longer.
7. Foods prepared are more hygienic because pests are prevented from entering.

evaluation : Differentiate between the types of kitchen.

* state and explain the factors to consider when planning a kitchen.

assignment: state and explain 7 factors to consider when planning a kitchen

**WEEK 6**

**TOPIC:** Kitchen plans

**CONTENTS;**

There are different types of kitchen design or layout. The major ones are;

1. The L-shape.
2. The U-shape.
3. The corridor.

Assignment: draw the different layout of kitchen and the sequential arrangement of the equipment.

**WEEK 7**

**TOPIC:** Kitchen equipment.

**CONTENTS;**

Kitchen equipment are facilities and tools used in the kitchen for food preparation and for making cooking tasks easier. The types of equipment needed depends on the user of the kitchen. When selecting or purchasing equipment, the following factors should be considered:

1. Income or availability of money.
2. Size of the kitchen.
3. The safety and maintenance of the equipment.
4. The durability and usability of the equipment.
5. The importance and essentiality of the equipment.
6. Facilities available.
7. Appearance and design of the equipment.

Types of kitchen equipment

Kitchen equipment can be divided into:

1. Small equipment.
2. Large equipment.
3. Mechanical equipment.

* SMALL EQUIPMENTS: these are equipment that can be moved from one place to another. They serve as the equipment in the kitchen. E.g. plates, bowl, tray, cover etc.
* LARGE EQUIPMENTS:they occupy fairly large floor spaces. They are not easily moved from one place to another, they are fixed equipment. E.g. gas cooker, refrigerators, electric cookers etc.
* MECHANICAL EQUIPMENTS: these are equipment that simplify some basic kitchen operations by the use of electricity. Examples are blender, food mixer, mincer, toaster, dish washer, potato peeler etc.

CARE OF THE REFRIGERATOR

1. Do not open the door for too long or else warm air would enter thus giving it additional work.
2. Food should be arranged inside the refrigerator in such a way that cold air can circulate all round. Excessive packing of food into the refrigerator should be avoided.
3. Never remove materials from the freezer compartment with sharp objects.
4. Defrost weekly.
5. Refrigerator should be cleaned thoroughly at regular intervals.
6. A qualified service engineer should be called at the first sight of a defect.

FACTORS TO CONSIDER WHEN CHOOSING A REFRIGERATOR

1. Choose one that is affordable.
2. Choose the one that meets the family’s requirement.
3. Choose the one that has light in the interior and thermostat control.
4. Choose the one that can be used in your locality depending on the availability of electricity supply.
5. Choose the one that has adequate compartment for food storage and freezing.

MATERIALS USED IN MAKING KITCHEN EQUIPMENT

1. Aluminum.
2. Steel.
3. Iron.
4. Plastic.
5. Enamel.
6. Wood.
7. Glass.
8. Ceramics.
9. China-ware.
10. Metal.
11. Earthen ware.

EVALUATION:State and explain the classification of kitchen equipment with examples.

Assignment:in a tabular form, state the materials used in making kitchen equipment and give 3 examples for each.

**WEEK 8**

**TOPIC:** CLEANING AGENTS AND ABRASIVES

**CONTENTS;**

Cleaning agents are chemicals that aid the washing and cleaning of kitchen equipment and utensils. The commonly cleaning agent used in the kitchen is soap. Soap is classified into local and commercial cleaning agent.

Homemade or locally made cleaning agents are the ones made by using local materials within our environment, they are cheap and effective. Examples include grinded egg shell, pawpaw leaf, wood ash, local sandpaper leaf, coconut husk, fine sand, soap etc.

Commercial cleaning agents are produced industrially after undergoing some certain processes. They are always expensive and come in form of solid bar, paste, liquid, powder etc. examples are detergent, bar soap, morning fresh, windows lane, and silvo.

Abrasives are substances used for grinding or polishing surfaces in the kitchen; they are used for scurrying or rubbing off dirt or stains on equipment. It can be classified into local and commercial.

KITCHEN LINEN AND THEIR USES

Kitchen linen are the different types of linen used for cleaning and maintaining proper hygiene and safety in the kitchen. They include;

1. Tea towel: for wiping cutleries, cook grease, glass ware and also to dry vegetables when necessary.
2. Dish cloth: to wipe kitchen equipment, table and work areas and sink, they can also be used to wipe off split liquids.
3. Oven gloves/ cloth: for removing hot pot and dishes from the oven and top ranges.
4. Hand towel: for drying hands.
5. String mop: for mopping any split liquid or for drying the floor after mopping.
6. Napkin: for drying hands.
7. Muslin: for covering food and straining.

Evaluation**:** itemize 5 local cleaning agents and their uses

* Mention 5 types of kitchen linen and their uses

Assignment: in a tabular form write the uses, care and cleaning of mechanical equipment

**WEEK 9**

**TOPIC:** SAFETY IN THE KITCHEN

**CONTENTS;**

Safety habits and devices are the precautions taken in the kitchen to avoid accidents. Since the kitchen is supposed to be a busy place for food preparation and cooking, common accidents are likely to occur. They include:

1. Falls
2. Burns and scald.
3. Cuts.
4. Suffocation.
5. Electric shock.
6. Accidental poisoning.

The following precautions must be taken to avoid accident in the kitchen.

1. Don’t wear high heel.
2. Mop any split liquid immediately.
3. Peeling of banana or yam should not be allowed to litter the kitchen.
4. Always wear glove when removing cooking pots from top ranges.
5. Don’t allow children in kitchen.
6. Open all windows to prevent suffocation.
7. Carry out all the cutting on the chopping board.
8. Always switch off the socket before and after electric appliances are used.
9. Replace loose sockets immediately.
10. All glass ware should be handled carefully.
11. Read and understand instruction manuals before using any equipment.

CAUSES OF ACCIDENTS IN THE KITCHEN

1. Lack of concentration.
2. Wrong use of equipment.
3. Disorderliness.
4. Distraction.
5. Poor lightening.
6. Slippery floor.
7. Wearing long clothing and shoes.
8. Being in a hurry or excessive haste.
9. Failure to apply safety rules.

Evaluation: list common causes of accidents in the kitchen

Assignment: what is a first aid box, list 10 contents of the first aid box, write the uses of first aid box.

COMMON INJURIES IN THE KITCHEN

In as much as safety precaution may be taken into consideration, it is still possible to have minor injuries. These injuries are;

1. Cuts.
2. Burns.
3. Scald.
4. Bruise.
5. Cuts: are fresh wound inflicted on the body by sharp objects such as knives, broken glasses, blades etc. any cut should be treated properly before it becomes a sore. The first treatment of any cut is to prevent loss of blood through bleeding. For a small cut, wash with antiseptic solution such as TCP or Dettol. Put on small clean gauze and bandage. For a large open cut, do not wash but bandage and call the doctor.
6. Burns: this is an injury caused by fire or anything hot and dry heat. Treat a burn by using a very clean and wet cloth over the burns area to exude the pain. If there is a severe pain immerse the burnt part in a clean cold water to check the effect of heat and stop the pain. For small burns, do not open.
7. Scald: this is caused by hot water or oil impairing the skin. Scald is a sort of steam or boiling liquid on the skin. The same treatment for burns can be given to scald.
8. Bruise: this occurs when the body is blown with a sufficient force, the blow may be applied directly or from afar of. When the body strike against a fixed surface, there is bleeding under the skin without breaking it.

Clean the area with water, apply soothing lotion such as calamine lotion, you can also place an ice block or Vaseline on the area.

*Evaluation:*state 5 precautions for preventing accidents in the kitchen.

* Describe the types of common injuries, their causes and treatment.

*Assignment: visit a clinic in your area and observe how cuts or open wounds are treated, record your findings*

**WEEK 10**

**TOPIC:** HYGIENE

**CONTENTS;**

Personal kitchen hygiene

Hygiene is an act of cleanliness as a means of healthy living to be free from diseases and germs. It is the observance of effective sanitary measures in food production, purchasing, processing and marketing.

The first step in producing clean and safe food is the selection of food in the market, it is always good to examine packaged foods and avoid forms of bad package, a bulged can, or a container with imperfect seal. All this precautions will prevent the introduction of already contaminated foods, and therefore, disease carrying organisms into the kitchen. Some of the sanitary procedures to be observed in the kitchen are;

1. Wash your hands with clean water.
2. Rinse and wipe them dry before beginning to cook in the kitchen and after each visit to the toilet.
3. Avoid long fingernails and the use of nail polish.
4. Avoid the use of jewelries on the fingers.
5. Do not leave your hair uncovered.
6. Always wear a clean apron or overall and avoid high heel shoe in the kitchen.
7. Any cut or sore should be well dressed and covered and the hands should be washed just before beginning to cook and during cooking care must be taken not to sneeze or cough.

KITCHEN HYGIENE

In order to keep the kitchen clean, to prevent contamination, the following rules should be observed;

1. Use only clean utensils and dishes in the preparation and servings of food.
2. Take hold of utensils by their handles and that of dishes and glasses in such a way that the service surface is not touched.
3. Wash all dishes after usage with soap and water and drain by turning them upside down.
4. Keep your work surfaces clean at all times and wipe up any spillage.
5. Always use a clean dry cloth for drying dishes and utensils and boil the cloth daily after use.
6. Keep refrigerator and other food storage place clean.
7. Cover the dustbin and empty them regularly.
8. Cover all foods when cleaning the floor and use methods that will keep down the dusts.

*Evaluation:*

* what is hygiene?
* Differentiate between personal and kitchen hygiene
* State 5 rules of kitchen hygiene.

*Assignment:* state 5 preventive measures against pests in the kitchen.

**Week 12 & 13: revision & exams**