



Republic of Rwanda  
Ministry of Education



**RTB** | RWANDA  
TVET BOARD

**FBOFN301**

## MAINTAINING FOOD NUTRIENTS IN COOKING

Maintain food nutrients in cooking

### Competence

RQF Level: 3

Learning Hours



30

Credits: 3

Sector: Hospitality and tourism

Trade: Food and Beverage Operations

Module Type: General

Curriculum: HOTFBO3001- TVET Level 3 in Food and Beverage Operations

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<b>Purpose statement</b>	This module describes the skills, knowledge and attitude required to maintain food nutrients in cooking. At the end of this module, the trainees will be able to identify nutrients, identify food groups, maintain balanced diets, conserve nutrients in cooking under minimum supervision				
<b>Learning assumed to be place</b>	Demonstrate Basics of Chemistry, Demonstrate Basic knowledge of General Biology, Demonstrate basic knowledge of mathematics.				
<b>Delivery modality</b>	<b>Training delivery</b>	<b>100%</b>	<b>Assessment</b>	<b>Total 100%</b>	
	Theoretical content	30%	Formative assessment	30%	
	Practical work:	70%		70%	50%
	<ul style="list-style-type: none"> <li>Group project and presentation 20%</li> <li>Individual project /Work 50%</li> </ul>				
				Summative Assessment	50%

## Elements of Competency and Performance Criteria

Elements of competency	
<b>1. Identify nutrients</b>	1.1. Micro nutrients are appropriately described according to their type
	1.2. Macro nutrients are appropriate described according to their type
	1.3. Sources of nutrients are properly identified as food type
	1.4. Nutrients function in the human body are appropriate described.
	1.5. Effects nutrition deficiency in the human body are appropriate described
<b>2. Identify food groups</b>	2.1. Energetic foods are effectively described in accordance with health conditions.
	2.2. body building food effectively described in accordance with health conditions.
	2.3. Body protecting nutrients are effective described in accordance with health conditions.
<b>3. Maintains balanced diets</b>	3.1. Types of diets are correctly identified as per types
	3.2. Diets are accurately selected as per health conditions
	3.3. Nutrients are accurately calculated as per menu
<b>4. Conserve nutrients in cooking</b>	4.1. Cooking methods are properly identified as per recipe
	4.2. Effect of cooking on nutrients are regularly identified as per food safety.
	4.3. Cooking guidelines are properly maintained in accordance with methods

# Course content

<b>Learning outcomes</b>	<b>At the end of the module the learner will be able to:</b> <ol style="list-style-type: none"> <li>1. Identify nutrients</li> <li>2. Identify food groups</li> <li>3. Maintains balanced diets</li> <li>4. Conserve nutrients in cooking</li> </ol>
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<b>Learning outcome 1: Identify nutrients</b>	<b>Learning hours: 5 Hours</b>
<b>Indicative content</b>	
<ul style="list-style-type: none"> <li>• <b>Describing micro nutrients</b> <ul style="list-style-type: none"> <li>✓ Defining key terms used in nutrition           <ul style="list-style-type: none"> <li>+ Nutrients</li> <li>+ Nutrition</li> <li>+ Malnutrition</li> </ul> </li> <li>✓ Factors influencing food choice</li> <li>✓ Identification of micro- nutrients           <ul style="list-style-type: none"> <li>+ Meaning</li> <li>+ Types of micro nutrients</li> </ul> </li> <li>✓ Identification of types of vitamins           <ul style="list-style-type: none"> <li>+ Describing water soluble vitamins</li> <li>+ Describing Fats soluble vitamins</li> </ul> </li> <li>✓ Identification of types minerals           <ul style="list-style-type: none"> <li>+ Trace minerals</li> <li>+ Major minerals</li> </ul> </li> </ul> </li> <li>• <b>Description of macro- nutrients.</b> <ul style="list-style-type: none"> <li>✓ Macro nutrients           <ul style="list-style-type: none"> <li>Carbohydrates               <ul style="list-style-type: none"> <li>+ Fats /lipids</li> <li>+ Proteins</li> </ul> </li> <li>✓ Types of carbohydrates (CHO)               <ul style="list-style-type: none"> <li>+ Simple CHO</li> <li>+ Complex CHO</li> </ul> </li> <li>✓ Identification Types Fats / lipids               <ul style="list-style-type: none"> <li>+ Saturated fats</li> <li>+ Unsaturated fats</li> </ul> </li> </ul> </li> </ul> </li> </ul>	

- ✓ Identification of proteins
  - ✚ High Biological proteins
  - ✚ Low biological proteins
- **Identifying Sources of nutrient.**
  - ✓ Food Sources of carbohydrates
    - ✚ Plants origin
    - ✚ Animal origin
  - ✓ Food sources of fats/ lipids
    - ✚ Plants origin
    - ✚ Animal origin
  - ✓ Food sources for proteins
    - ✚ Plants origin
    - ✚ Animal origin
  - ✓ Food sources of Vitamins
    - ✚ Plant origin
    - ✚ Animal origin
  - ✓ Food sources of minerals
    - ✚ Plant origin
    - ✚ Animal origin
- **Describing nutrients functions in the human body**
  - ✓ Functions of carbohydrates in the human body
    - ✚ Functions of simple CHO
    - ✚ Functions of complex CHO
  - ✓ Functions of fats/ lipids
    - ✚ Functions of saturated fats
    - ✚ Functions of unsaturated fats
  - ✓ Functions of proteins
    - ✚ Functions of High biological proteins
    - ✚ Functions of low biological proteins
  - ✓ Functions of Vitamins
    - ✚ Functions of water soluble vitamins
    - ✚ Functions of fats soluble vitamins
  - ✓ Function of minerals
    - ✚ Functions of trace minerals
    - ✚ Functions of major minerals
  - ✓ Functions of water in the human body

- **Describing nutrition deficiency in the human body**

- ✓ Deficiency of carbohydrates

- ✚ Headache
- ✚ Fatigue
- ✚ Weakness
- ✚ Constipation
- ✚ Difficult concentrating
- ✚ Nausea
- ✚ Bad breath

- ✓ Excess of carbohydrates

- ✚ Obesity /weight gain
- ✚ Diabetes
- ✚ Poor metabolic health
- ✚ Heart disease

- ✓ Deficiency of fats/ lipids

- ✚ Dry rashes
- ✚ Hair loss
- ✚ A weaker immune system
- ✚ Intellectual disability
- ✚ Scaly dermatitis
- ✚ Alopecia
- ✚ Thrombocytopenia

- ✓ Excess of fats

- ✚ Obesity /overweight

- ✚ Stroke

- ✚ High blood pressure

- ✚ Skin problems

- ✚ Shortness of breath

- ✓ Deficiency of proteins

- ✚ Swelling
- ✚ Fatty liver
- ✚ Skin degeneration
- ✚ Risk of bone fracture

- ✓ Excess of proteins

- ✚ Weight gain
- ✚ Bad breath
- ✚ Kidney damage
- ✚ Increased cancer risk
- ✚ Heart diseases

- ✚ Marasmus
- ✓ Deficiency of Vitamins
- ✚ Brittle hair and nails
- ✚ Mouth ulcers or cracks in the corner of the mouth
- ✚ Bleeding gums
- ✚ Poor night vision and white growths on the eyes
- ✚ Scaly patches and dandruff
- ✚ Hair loss
- ✚ Red or white bumps on the skin
- ✚ Restless leg syndrome
- ✓ Excess of vitamin A
  - ✚ Coarse hair
  - ✚ Partial loss of hair
  - ✚ Cracked lips and dry
  - ✚ Rough skin
  - ✚ Liver damage
- ✓ Deficient of minerals
  - ✚ Weak bones
  - ✚ Fatigues
  - ✚ Decreased immune system
  - ✚ Anaemia caused by lack of iron
  - ✚ Osteoporosis

### Resources required for the learning outcome

Equipment	Computer , projector , Fridges, containers
Materials	Flipchart, Pedagogical document, Audio visual kit, Internet, Textbooks, food items
Tools	Nutrients measuring tools , portioning tools
Facilitation techniques	<ul style="list-style-type: none"> <li>• Demonstration and simulation</li> <li>• Individual and group work</li> <li>• Practical exercise</li> <li>• Group discussion</li> <li>• Field visit</li> <li>• Four corners</li> <li>• Think pair square</li> <li>• Research</li> </ul>

Formative assessment methods	<ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Oral presentation</li> <li>• Performance assessment</li> <li>• Project based assessment</li> </ul>
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<b>Learning outcome 2: Identify food groups</b>	<b>Learning hours: 5</b>
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**Indicative content**

- **Describing energetic food.**
  - ✓ Identification of energy giving food nutrients
    - + Carbohydrates
    - + Fats /lipids
  - ✓ Energy boosting food items
- **Describing body building food.**
  - ✓ Body building nutrients
    - + Proteins
    - + Minerals
  - ✓ Body building food items
- **Describing body protecting nutrients.**
  - ✓ Body protecting nutrients
    - + Vitamins ADEK
    - + B Complex vitamins
    - + Vitamin C
  - ✓ Body protecting food items

**Resources required for the indicative content**

Equipment	Computer , projector , Fridges, containers , tables, chairs
Materials	Flipchart, Audio visual kit, Internet, Textbooks , food items , beverage items , body building foods, energetic food, functional foods

Tools	Nutrients measuring tools , portioning tools, papers
Facilitation techniques	<ul style="list-style-type: none"> <li>• Demonstration and simulation</li> <li>• Individual and group work</li> <li>• Practical exercise</li> <li>• Group discussion</li> <li>• Field visit</li> <li>• Four corners</li> <li>• Think pair square</li> <li>• Research</li> </ul>
Formative assessment methods	<ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Oral presentation</li> <li>• Performance assessment</li> <li>• Project based assessment</li> </ul>

<b>Learning outcome 3: MAINTAIN BALANCED DIETS</b>	<b>Learning hours: 10</b>
<b>Indicative content</b>	
<ul style="list-style-type: none"> <li>• <b>Identify diets</b> <ul style="list-style-type: none"> <li>✓ Meaning of key terms <ul style="list-style-type: none"> <li>✚ Diets</li> <li>✚ Balanced diets</li> <li>✚ Dietary habit</li> </ul> </li> <li>✓ Importance of a Balanced diets <ul style="list-style-type: none"> <li>✚ Disease preventions</li> <li>✚ Growth of the body</li> <li>✚ Building the body strengthening immune system</li> <li>✚ Boosting energy</li> </ul> </li> </ul> </li> <li>• Identification of types of diets <ul style="list-style-type: none"> <li>✚ Vegetarians diet</li> <li>✚ Non- vegetarian diet</li> <li>✚ Lacto-vegetarian diet</li> <li>✚ Lacto-ovo vegetarian diet</li> </ul> </li> <li>• <b>Select diets as per health conditions</b> <ul style="list-style-type: none"> <li>✓ Identification of health conditions</li> <li>✓ Nutritional needs according to different factors</li> <li>✓ Selection diets according to different factors</li> </ul> </li> </ul>	

- **Calculate nutrients**

✓ Recommended Dietary Allowance (RDA) for different nutrients

+ Carbohydrates

+ Fats /lipids

+ Proteins

+ vitamins

+ Minerals

✓ Calculating nutrients serving size according to factors:

+ Age

+ Physical activities

+ Weight loss or gain

+ Diseases

### Resources required for the indicative content

Equipment	Computer , projector , Fridges, containers , tables, chairs
Materials	Flipchart, Pedagogical document, Audio visual kit, Internet, Textbooks, food items , beverage items
Tools	Nutrients measuring tools , portioning tools, papers, calculator
Facilitation techniques	<ul style="list-style-type: none"> <li>• Demonstration and simulation</li> <li>• Individual and group work</li> <li>• Practical exercise</li> <li>• Group discussion</li> <li>• Field visit</li> <li>• Four corners</li> <li>• Think pair square</li> <li>• Research</li> </ul>
Formative assessment methods	<ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Oral presentation</li> <li>• Performance assessment</li> <li>• Project based assessment</li> </ul>

**Learning outcome 4: CONSERVE NUTRIENTS  
IN COOKING**

**Learning hours: 10 hours**

## Indicative content

- **Identify cooking methods**

- ✓ Importance of cooking food
- ✓ Cooking methods
  - + Boiling
  - + Frying
  - + Grilling
  - + Poaching
  - + Blanching
  - + Steaming

- **Identify effects of cooking on nutrients**

- ✓ Effect of heat on micro –nutrients
  - + Effect of heat Vitamins
  - + Effect of heat on Minerals
- ✓ Effect of heat on macro- nutrients
  - + Effect of heat on Carbohydrates
  - + Effect of heat on Fats/lipids
- ✓ Effect of cooking methods on nutrient
  - + Effect of boiling on nutrients
  - + Effect of frying on nutrients
  - + Effect of grilling on nutrients
  - + Effect of steaming on nutrients
  - + Effect of poaching on nutrient

- **Maintain cooking guidelines**

- ✓ Guidelines for cooking starches
- ✓ Guidelines for cooking vitamins
- ✓ Guidelines for cooking minerals

### Resources required for the indicative content

Equipment	Computer , projector , Fridges, containers , tables, chairs
Materials	Flipchart, Pedagogical document, Audio visual kit, Internet, Textbooks, food items , beverage items

Tools	Nutrients measuring tools , portioning tools, papers, calculator
Facilitation techniques	<ul style="list-style-type: none"> <li>• Demonstration and simulation</li> <li>• Individual and group work</li> <li>• Practical exercise</li> <li>• Group discussion</li> <li>• Field visit</li> <li>• Four corners</li> <li>• Think pair square</li> <li>• Research</li> </ul>
Formative assessment methods	<ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Oral presentation</li> <li>• Performance assessment</li> <li>• Project based assessment</li> </ul>

## Integrated/Summative assessment (For specific module)

### Integrated situation

X hotel is expecting to host a group of 10 persons from Rwanda TVET board, coming for a meeting of two days and they wish to take lunch at your hotels on a la carte menu, bearing in mind that, their dietary needs are different as 2 women are pregnant, 2 old persons, 1 woman has a child of 3 years old , 5 of them are vegetarian while other 5 guests are non- vegetarians . you are requested to prepare a balanced diet menu and serve each category of guests. Within 2 hours

#### Resources

Tools	kitchen tools(measuring tools, mixing tools, cooking tools, cutting tools ) food service tools(cutlery, flatware, crockery, table linen) ,pens, papers , calculators
Equipment	kitchen equipment (ovens, fridges, tables, chairs , restaurant equipment
Materials/ Consumables	Different food items

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
<b>Learning outcome 1: Identify nutrients (12%)</b>	1.1. Micro-nutrients are appropriately described according to their type	Ind.1 Factors influencing food choice properly considered			1
		Ind.2 Micro- nutrients are clearly identified (vitamins, minerals			1
	1.2. Macro nutrients are appropriate described according to their type	Ind.1 Carbohydrates (CHO) rich food are clearly selected			1
		Ind.2 Fats / lipids rich are selected			1
		Ind.3 Proteins providing food are selected			1
	1.3 Sources of nutrients are properly identified as food type	Ind.1 CHO food sources are selected			1
		Ind.2 Fats/lipids food sources are selected			1
		Ind.3 proteins, vitamins and minerals food sources are selected			1
	1.4 Nutrients function in the human body are appropriate described	Ind.1 Functions of CH and Fats are stated			1
		Ind.2 Functions of proteins ,vitamins and minerals are stated			1

	<b>1.5</b> Effects nutrition deficiency in the human body are appropriate described	Ind.1 Effect of CHO and Fats deficiency are stated			2
		Ind.2 Effects of proteins ,vitamins and mineral deficiency are stated			2
<b>Learning outcome 2: Identify food groups (18%)</b>	2.1. Energetic food are effectively described in accordance with health conditions.	Ind.1 Energy giving food nutrients are clearly identified on the menu			2
		ind.2 Energy boosting food items clearly identified			2
	2.2. Body building food effectively described in accordance with health conditions	Ind.1 Body building nutrients are clearly described			3
		Ind.2 Body building food items clearly described			3
	2.3 Body protecting nutrients are effective described in accordance with health conditions.	Ind.1 Body protecting nutrients are well described			3
		Ind.2 Body protecting food items are well described			3
<b>Learning outcome 3: Maintains balanced diets (40%)</b>	3.1 Types of diets are correctly identified as per types	Ind1. vegetarian diets are prepared			4
		Ind. 2 Diets for non-vegetarian is prepared			4
	3.2 Diets are accurately selected as per health conditions	Ind.1 Balanced diets for child is prepared			4
		Ind.2 Balanced diets for elders is well prepared			8
		ind.3 Balanced diet for pregnant woman is well prepared			8
	3.3 Nutrients are accurately calculated as per menu	Ind. 1 CHO serving size is maintained			4
Ind.2 Fats/lipids serving size is maintained				4	
Ind3. Proteins, vitamins and minerals serving size is maintained.				4	
<b>Learning outcome 4: Conserve nutrients in cooking (30%)</b>	4.1Cooking methods are properly identified as per recipe	Ind.1Appropriate cooking method is applied			4
		Ind 2. Cooking time and temperature are properly controlled			4
	4.2 Effect of cooking on nutrients are regularly identified as per food safety.	Ind.1 Effect of heat on CHO is correctly ensured			4
		Ind.2Effect of heat on proteins is ensured			4
		Ind.3 Effect of heat on minerals			4
	4.3 Cooking guidelines are properly maintained in accordance with methods	Ind.1 Guidelines for cooking starches are maintained			3
		Ind2: Guidelines for cooking vitamins well maintained			3
		Ind.3 Guidelines for cooking minerals are well maintained			4
	<b>Total marks</b>				
<b>Percentage Weightage</b>					<b>100%</b>
<b>Minimum Passing line % (Aggregate): 70%</b>					

## References:

1. Bing Wen SHAN BIAN ZHU, *Cement Concrete Pavement Construction*,1990, Abebooks
2. De Vekey RC (2001). *Bricks blocks and masonry made from aggregate concrete: Part 2 – APPEarance and environmental aspects*, BRE Digest 460, Part 2.
3. M.Rashad Islam & Rafiqul A Tarelder, *Pavement Design: Materials, Analysis*,2016, McGraw-Hill Education
4. Norbert J. Delatte, *Concrete Pavement Design, Construction, and Performance Second Edition*,2016 Routledge
5. William & Radford, *Cement Houses and How to Build Them* ,1996, McGraw-Hill Education