APPLY PRINCIPLES OF FOOD SCIENCE AND NUTRITION

UNIT CODE: 0915 551 07A
TVET CDACC UNIT CODE: HOS/OS/FBO/CC/01/5/MA

UNIT DESCRIPTION

This unit specifies the competencies required to apply principles of food science and nutrition. It involves application of knowledge of food composition, application of knowledge of nutritional deficiency and disorders, application of organic chemistry in food production and application of knowledge of food micro-biology.

It is applicable in hospitality industry.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the **key outcomes** which make up **workplace function**.	**PERFORMANCE CRITERIA** These are **assessable** statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the range.***
1. Apply knowledge of food composition	1.1 ***Food components*** are identified as per food composition data base. 1.2 Nutrients functionality is applied as per recommended dietary reference intake. 1.3 ***Nutritional requirement*** is identified as per food pyramid. 1.4 Knowledge of functions of food is applied as per nutritional needs of clients 1.5Knowledge on ***Macro and micro nutrients*** is applied as per nutritional needs of clients. 1.6 Balanced meal plans are designed as per client nutritional needs.
2. Apply knowledge of nutritional deficiency and disorders	2. 1 ***Digestion*** of foods in the GIT is analysed as per work requirement. 2. 2 Knowledge on digestion, absorption and utilisation of nutrients is applied in food production and service as per work requirement. 2. 3 ***Nutritional deficiency diseases*** are analysed as per work procedure.
3. Apply knowledge of organic chemistry in food production	3.1 Knowledge of nutrients in food composition is applied as per work requirement. 3.2 Knowledge of ***functional groups*** within atoms and molecules in food composition is applied as per work requirements 3.3 Knowledge of ***hydrocarbons*** reaction mechanism is applied as per work requirement.

	3.4 Knowledge of organic reactions in cooking is applied as per work requirements 3.5 Knowledge of chemical reactions in food quality and safety is applied as per work requirement. knowledge of organic chemistry in food production
4. Apply knowledge of food micro-biology	4.1 Knowledge of ***contamination*** in food is applied as per healthy and safety requirement. 4.2 Knowledge of ***food spoilage*** is applied as per food safety requirement. 4.3 Knowledge of ***food poisoning*** is applied as per healthy and safety requirement. 4.4 ***Guidelines of food preservation*** are applied as per hygiene and food safety requirement. 4.1 ***Food laws*** are applied as per food, drugs and substance act chapter 254.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	**Range**
1. ***Nutritional needs*** may include but are not limited to:	• Macro-nutrients • Micro-nutrients • Water • Fibre
2. Macro and micro nutrients may include but are not limited to:	• Macro - carbohydrates - Proteins - Fats - Water • Micro - vitamins - Minerals
3. Digestion may include but not limited to:	• Liquids(water, juices) • Fruits and vegetables(raw fruits, cooked fruits) • Carbohydrates • Proteins • Fats • Dairy - Mixed meals

4. Nutritional deficiency diseases/ may include but not limited to:	• Kwashiorkor • Marasmus • Scurvy • Anemia • Night blindness • beriberi • Rickets • Osteomalacia
5. Functional groups in foods may include but not limited to:	• Hydroxyl group (-OH) • Carboxyl group (-COOH) • Amine group (-NH2) • Carbonyl group (C=O) • Phosphate group (-PO4) • Ester group (-COO-)
6. Hydrocarbons in foods may include but not limited to:	• Hydrocarbon in fats and oils • Hydrocarbons in Maillard reaction • Hydrocarbons in caramelization • Hydrocarbons in smocking and grilling • Hydrocarbons in frying • Hydrocarbons in baking and roasting • Hydrocarbons in food preservation.
7. Food contamination may include but not limited to:	• Microbial contamination • Chemical contamination • Physical contamination
8. Food spoilage may include but not limited to:	• Microbial spoilage • Enzymatic spoilage • Chemical spoilage • Physical spoilage • Natural spoilage

9. Food poisoning may include but not limited to	• Bacterial food poisoning • Viral food poisoning • Parasitic food poisoning • Food bone toxins • Chemical food poisoning
10. Guidelines of food preservation may include but not limited to:	• General hygiene practice • Methods of food preservation • Storage guidelines • Special considerations • Safety practices • Nutritional consideration.
11. Food laws may include but not limited to:	• Food safety and hygiene regulations • Food service standards • Licensing and inspection requirement • Hazard analysis and critical control points. • Environmental healthy and waste management.

REQUIRED SKILLS AND KNOWLEDGE

The individual needs to demonstrate knowledge of:

Knowledge

- Nutrition and disease
- Anatomy and physiology
- Food nutrient interaction
- Food safety and hygiene
- Food safety and hygiene
- Menu planning and presentation
- Allergen awareness
- Food preservation
- Legal and ethical responsibilities
- Waste management
- Sustainable waste management

Skills

The individual needs to demonstrate the following skills:

- Communication skills
- Information technology skills
- Nutritional analysis skills
- Food science application skills
- Menu development skills
- Cooking techniques for nutritional retention
- Food safety and quality assurance skills.
- Research and analytical skills
- Problem solving and innovation skills
- Sustainability and waste reduction skills.

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 1.1 Food components are identified as per food composition data base. 1.2 Nutrients functionality is applied as per recommended dietary reference intake. 1.3 Nutritional requirement is identified as per food pyramid. 1.4 Knowledge of functions of food is applied as per nutritional needs of clients 1.5 Balanced meal plans are designed as per client nutritional needs. 1.6 Knowledge on digestion, absorption and utilisation of nutrients is applied in food production and service as per work requirements. 1.7 Nutritional deficiency diseases are analysed as per work procedure 1.8 Knowledge of organic reactions in cooking is applied as per work requirements 1.9 Knowledge of chemical reactions in food quality and safety is applied as per work requirement 1.10 Knowledge of organic chemistry in food production knowledge of ***contamination*** in food is applied as per healthy and safety requirement.

	1.11 Knowledge of ***food spoilage*** is applied as per food safety requirement. 1.12 Knowledge of ***food poisoning*** is applied as per healthy and safety requirement. 1.13 ***Guidelines of food preservation*** are applied as per hygiene and food safety requirement. 1.14 ***Food laws*** are applied as per food, drugs and substance act chapter 254
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place. 2.2 Access to relevant assessment environment.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical 3.2 Project 3.3 Third party report 3.4 Portfolio of evidence 3.5 Written tests 3.6 Oral questioning
4. Context of Assessment	4.1 Competency may be assessed in a training institution, workplace or in a simulated workplace.
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry subsector, workplace and job roles is recommended.