APPLY NUTRITION BIOCHEMICAL TECHNIQUES

UNIT CODE: MED/OS/PM/CC/05/6/A

UNIT DESCRIPTION

This unit specifies the competencies required to apply biochemical techniques. It involves demonstrating the knowledge of macromolecules and their metabolism, enzymes, molecular genetics and biochemistry of macronutrients

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. Demonstrate the knowledge of macromolecules and their metabolism	1.1 ***Types of macro molecules*** identified as per the workplace procedures 1.2 The hierarchy of molecular organization of cells is illustrated as per the workplace procedures 1.3 The structure of the cell and how it is organized to conduct its characteristic chemical functions is outlined based on workplace procedures
2. Demonstrate the knowledge of enzymes and hormones	2.1 The structure of enzymes outlined as per the workplace procedures 2.2 The relationship among holoenzymes, apoenzymes and cofactors outlined as per the workplace procedures 2.3 The general mechanisms by which enzymes catalyze reactions outlined as per the type of macro molecule 2.4 Enzymes classified as per the ***I.B.U.N*** 2.5 Properties of enzymes identified as per the workplace procedures 2.6 Isoenzymes and zymogens discussed based on workplace procedures 2.7 Enzymes related to their chemical applications based on workplace procedures 2.8 Functions of hormones, their secretion modes and endocrine disorders are identified and described as per resource materials

3. Demonstrate the knowledge of molecular genetics	3.1 Nucleic acids identified and classified as per the workplace procedures 3.2 Heterocyclic bases present in nucleic acid identified as per the molecular structure 3.3 Pentose sugars in nucleic acid identified as per the molecular structure 3.4 Structures and functions of DNA and RNA are described as per resource materials 3.5 The process of DNA replication described as per workplace procedures 3.6 The process of DNA transcription described workplace procedures 3.7 Protein synthesis process described on workplace procedures 3.8 Point mutation described on workplace procedures 3.9 Chromosomes and chromosome pathology outlined on workplace procedures
4. Demonstrate the knowledge of biochemistry of macronutrient	4.1 Terminologies in biochemistry of macronutrients are identified and described as per resource materials 4.2 Biochemistry of carbohydrates is described as per resource materials 4.3 Biochemistry of proteins is described as per resource materials 4.4 Biochemistry of lipids is described as per resource materials

RANGE

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

Variables	**Range** **May include but not limited to:**
1. I.B.U.N	• International union of biochemistry nomenclature
2. Types of macro molecules	• Carbohydrates • Proteins • Lipids

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Organizing skills
- Analytical skills
- Negotiation skills
- Interpersonal skills
- Communication skills
- Evaluation skills
- Problem solving
- Critical thinking

Required Knowledge

The individual needs to demonstrate knowledge of:

- The basic structure of a living cell and its organization
- The structural elements of carbohydrates, proteins, lipids and their interactions with other small molecules
- The nature of enzymes
- The process of enzyme catalysis
- Biochemical reactions which micro and macro molecules undergo to maintain homeostasis, growth and maturation
- The structural elements of chromosomes and their functions

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 Identified types of macro molecules as per the workplace procedures 1.2 Illustrated the hierarchy of molecular organization of cells is as per the workplace procedures 1.3 Outlined the structure of the cell and how it is organized to conduct its characteristic chemical functions based on workplace procedures 1.4 Outlined the structure of enzymes as per the workplace

	procedures 1.5 Outlined the relationship among holoenzymes, apoenzymes and cofactors as per the workplace procedures 1.6 Outlined the general mechanisms by which enzymes catalyze reactions as per the type of macro molecule 1.7 Classified enzymes as per the I.B.U.N 1.8 Identified properties of enzymes as per the workplace procedures 1.9 Discussed isoenzymes and zymogens based on workplace procedures 1.10 Related enzymes to their chemical applications based on workplace procedures 1.11 Identified and classified nucleic acids as per the workplace procedures 1.12 Identified heterocyclic bases present in nucleic acid as per the molecular structure 1.13 Identified pentose sugars in nucleic acid as per the molecular structure 1.14 Described the process of DNA replication as per workplace procedures 1.15 Described the process of DNA transcription workplace procedures 1.16 Described protein synthesis process on workplace procedures 1.17 Described point mutation on workplace procedures 1.18 Outlined chromosomes and chromosome pathology on workplace procedures 1.19 Described the relationship between natural laws and common physical phenomena as per the principles of physical chemistry 1.20 Applied physical principles of pharmaceutical procedures as per workplace procedures 1.21 Identified the role of physical principles in the dynamic process in the human body based on workplace procedures
2. Resource Implications	The following resources must be provided: 2.1 Functional Pharmaceutical technology system
3. Methods of Assessment	Competency may be assessed through:

	3.1 Written tests 3.2 Third party reports 3.3 Oral questioning 3.4 Interview 3.5 Observation
4. Context of Assessment	Assessment could be conducted: 4.1 On-the-job 4.2 Off-the–job 4.3 During industrial attachment
5. Guidance information for assessment	Holistic assessment with related units in the sector