

Unit 11: Scientific Basis of Healthcare Science: Clinical Science

Level:	4
Unit type:	Optional (General Healthcare Science)
Credit value:	25
Guided learning hours:	200

Unit summary

In this unit, you will add a broad base to your scientific knowledge, laying the foundation on which to build your knowledge, skills and professional practice as you move through this programme of learning. You will be expected to consolidate your knowledge of embryology anatomy, physiology, pathology and the sociology of health and disease that underpin the practice of healthcare science.

You will be introduced to each subject area through the learning outcomes and associated additional information. You will then deepen, develop and apply your learning in the context of the healthcare science division and specialism in which you are working.

Unit assessment requirements

There are no specific assessment requirements for this unit. Please refer to the assessment strategy in *Annexe B*.

Additional information

For AC 1.1 give an example of how the structure of a part of the body is related to its function

AC1.2 to include:

- chemical
- cellular
- tissue
- organ
- system

AC1.3 to include:

- metabolism
- responsiveness
- movement
- growth

- differentiation
- reproduction.

AC1.4 to include:

- describe the components of a feedback system and compare the operation of negative and positive feedback systems
- describe how the body changes from birth to old age, and how this is a progressive decline in the body's ability to restore homeostasis.

AC1.5 to include:

- inflammatory
- infectious
- allergic and autoimmune
- ischaemic
- metabolic
- congenital including genetic
- developmental
- degenerative
- neoplastic
- traumatic.

Learning outcome 2 is designed to provide learners with a broad scientific foundation to their practice. This is a key principle of all Healthcare Science Education and Training programmes. Learners at Level 4 are expected to have this broad knowledge across all body systems but will then develop their knowledge specific to their specialist area of practice.

AC2.2 includes anatomy, physiology, and pathology:

- skeletal system
- muscular system, including comparison of skeletal, cardiac and smooth muscle
- nervous system:
 - spinal cord and spinal nerves
 - brain and cranial nerves
 - sensory and motor systems
 - vision, hearing and equilibrium
- endocrine system:
 - hormonal mechanisms and control
- cardiovascular system, including blood and blood vessels
- respiratory system
- lymphatic and immune systems
- digestive system:
 - nutrition and metabolism
- renal system
 - electrolyte and acid-base balance

- reproductive systems:
 - reproductive cycles
 - key features of gametogenesis
 - differences in male and female gametogenesis
 - process of, and differences between mitosis and meiosis
 - the events in fertilisation
 - the key stages of development of the embryo.

AC2.3 requires the learner to apply their knowledge of anatomy and physiology by explaining how each of the body systems is affected by ONE common disease, recognising that some but not all common diseases will affect all systems.

AC3.1 to include:

- factors that contribute to well-being and keep individuals and societies healthy
- the impact of economic, social and psychological factors including culture, age, ethnicity, gender, socio-economic status and spiritual or religious beliefs, on health and health-related behaviour.

AC3.2 to include the advantages and disadvantages of the biomedical and social model of health and disability, including all factors that incorporate biomedical and social models of disability for example age, congenital diseases, poverty and environment including healthcare environment.

AC3.3 to include discussion about how understanding biomedical and social model can improve patient care for example and how the environment can be adapted for the benefit of all patients.

AC3.7 includes principles and methods for rehabilitation of people e.g.:

- visual impairment
- hearing impairment

to include principles of sensory augmentation and substitution:

- musculoskeletal impairment
- mental health, e.g., the benefits of mindfulness for improving wellbeing and mental health.

This topic area should also include the underpinning theoretical foundations and models The Health Belief Model and World Health Organisation (WHO) model of activity limitation (disability).

Learning outcomes and assessment criteria

To pass this unit, learners need to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria outline the requirements that the learner is expected to meet to achieve the learning outcomes and the unit.

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
1	Understand the structural, chemical, cellular and tissue organisation of the body and the cellular, tissue and systems' responses to disease	1.1	Explain the basic difference between anatomy and physiology			
		1.2	Describe the levels of organisation of the body			
		1.3	Describe the important life processes			
		1.4	Define and explain the importance of homeostasis			
		1.5	Describe the pathological processes that give rise to disease and their effects on the different levels of organisation of the body			
2	Understand the structure and function of all body systems and the effects of common diseases	2.1	Explain illness, disease, symptoms and signs			
		2.2	Describe anatomy and physiology of each body system			
		2.3	Explain the underlying pathological processes and changes in structure and function that occur in response to a disease for each of the body systems			

Learning outcomes		Assessment criteria		Evidence type	Portfolio reference	Date
3	Understand the principles and core concepts of the sociology of health and illness	3.1	Explain the principles and core concepts of the sociology of health and illness			
		3.2	Compare the biomedical and social models of health and disability			
		3.3	Explain the impact of the biomedical and social model on improving patient care			
		3.4	Explain the sociology of health and illness relevant to common disorders, in relation to own workplace			
		3.5	Discuss the social, personal, and economic effects of mental ill health			
		3.6	Discuss the impact of experiencing a mental health problem on individuals, family, and society			
		3.7	Describe the biological, psychological, and social aspects that predispose, precipitate and perpetuate mental health conditions			
		3.8	Discuss the principles and methods for rehabilitation of people commonly referred to healthcare science services or own area of work			

Learner name: _____

Date: _____

Learner signature: _____

Date: _____

Assessor signature: _____

Date: _____

Internal verifier signature: _____

Date: _____

(if sampled)