

		UNIT ID: 2288
Domain	TELECOMMUNICATION AND WIRELESS TECHNOLOGY	
Title:	Demonstrate an understanding of wireless mobile network technologies	
Level: 5		Credits: 8

Purpose

This unit standard is intended for those who demonstrate an understanding of wireless network technologies. People credited with this unit standard are able to analyze and demonstrate an understanding of Global System for Mobile (GSM) technology, demonstrate an understanding of Universal Mobile Telecommunication System (UMTS), analyze and demonstrate an understanding of Long Term Evolution (LTE) technology, illustrate an understanding of General Packet Radio Service (GPRS) technology, demonstrate an understanding of network and radio frequency planning, demonstrate an understanding of cellular radio frequency coverage

This unit standard is intended for those who work in the telecommunication and wireless technology working environment.

Special Notes

1. Entry information:
 - Prerequisites:
 - None
2. This unit standard is to be delivered and assessed in the context of information and communication technology.
3. Assessment evidence may be collected from a real or a simulated workplace in which telecommunication and wireless technology operations are carried out.
4. Tools and equipment may include but are not limited to computer, external devices, storage devices and other and basic computer applications.
5. Performance of all elements in this unit standard must comply with industry standards.
6. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act 2007(Act No 11, 2007)
 - Regulations relating to the health & Safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this sub-field may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority on www.namqa.org and the Namibia Training Authority on www.nta.com.na

Elements and Performance Criteria

Element 1: Analyze and demonstrate an understanding of Global System for Mobile (GSM) technology

Performance Criteria

- 1.1 Cellular network structure is demonstrated.
- 1.2 GSM architecture of mobile technology is analyzed and explained.
- 1.3 GSM interfaces and protocols are outlined and explained.
- 1.4 GSM frequency bands are illustrated and defined.
- 1.5 GSM mobility technology and frequency re-use are demonstrated.

Element 2: Demonstrate an understanding of Universal Mobile Telecommunication System (UMTS)

Performance Criteria

- 2.1 UMTS architecture of mobile technology is analyzed and explained.
- 2.2 UMTS interfaces and protocols are outlined and explained.
- 2.3 UMTS frequency bands are illustrated and defined.
- 2.4 UMTS mobility technology and frequency re-use are demonstrated.

Element 3: Analyze and demonstrate an understanding of Long Term Evolution (LTE) technology

Performance Criteria

- 3.1 LTE architecture of mobile technology is analyzed and explained.

- 3.2 LTE coding and modulation is explained.
- 3.3 LTE frequency band and channel numbers are illustrated and explained.
- 3.4 LTE mobility technology and frequency re-use are demonstrated.

Element 4: Illustrate an understanding of General Packet Radio Service (GPRS) technology

Performance Criteria

- 4.1 General packet radio service architecture is illustrated.
- 4.2 Function of General Packet Radio Services (GPRS) nodes: Service General Packet Radio Service Support Node (SGSN) and Gateway General Packet Radio Service Support Node (GGSN) are outlined.
- 4.3 GPRS base station subsystem and signaling systems are explained.
- 4.4 GPRS frame structure is explained and illustrated.

Element 5: Demonstrate an understanding of Network and Radio frequency planning

Range

Radio frequency planning is not limited to antenna direction, tilt, neighbor cells list and mobility

Performance Criteria

- 5.1 Radio network planning tools are identified and explained.
- 5.2 Radio wave and spectrum are illustrated.
- 5.3 Network planning and radio link budgeting is interpreted, designed and implemented.
- 5.4 Modes of propagation are outlined and explained.

Element 6: Explain cellular radio frequency coverage

Performance Criteria

- 6.1 Path loss and signal strength are explained.
- 6.2 Relation of antenna height to received signal is interpreted and explained.
- 6.3 Relation of transmitted power to received signal is interpreted.
- 6.4 Antenna tilt in relation to coverage is interpreted.

Registration Data

Subfield:	Information and Communication Technology
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