NATIONAL SKILLS QUALIFICATION

LEVEL 3

TITLE:

DRONE TECHNOLOGY

YEAR:

2024

NATIONAL SKILLS QUALIFICATION

NSQ LEVEL 3 DRONE TECHNOLOGY

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification aims to equip learners with skills for effective drone operation and application across design and other professional fields

QUALIFICATION OBJECTIVES

The learner should be able to understand: -

i. Maintain safe working practices in the graphic design environment
ii. Work effectively within graphic design teams
iii. Convey technical information effectively
iv. Apply drone mechanics and flight physics
v. Carryout Drone Assembly and Maintenance
vi. Conduct Flight Operations and Training
vii. Execute Autonomous Flight and Mission Planning.
viii. Operate drones
ix. Integrate drone-captured media into design projects
x. Apply Drones in diverse Career fields
xi. Identify Entrepreneurship and Career Opportunities in Drones
xii. Utilize Advanced Applications and Certification Resources

Mandatory Units

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
UNIT 01	ICT/DRT/001/L3	**Occupational Health and Safety**	1	10	Mandatory
UNIT 02	ICT/DRT/002/L3	**Teamwork**	1	10	Mandatory
UNIT 03	ICT/DRT/003/L3	**Communication**	1	10	Mandatory
UNIT 04	ICT/DRT/004/L3	**Fundamentals of Drone Technology**	2	20	Mandatory
UNIT 05	ICT/DRT/005/L3	**Drone Mechanics and Flight Physics**	2	20	Mandatory
UNIT 06	ICT/DRT/006/L3	**Drone Assembly and Maintenance**	2	20	Mandatory
UNIT 07	ICT/DRT/007/L3	**Flight Operations and Training**	2	20	Mandatory
UNIT 08	ICT/DRT/008/L3	**Autonomous Flight and Mission Planning**	2	20	Mandatory
UNIT 09	ICT/DRT/009/L3	**Applications, Career and Certifications in Drone Technology**	2	20	Mandatory
TOTAL			**10**	**100**	

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 1: OCUPATIONAL HEALTH AND SAFETY

Unit Reference Number:

NSQ Level: 3

Credit Value: 1

Guided Learning Hours: 10

Unit Purpose:

This unit is designed to equip learners with the knowledge and skills to implement and maintain safe working practices in the IT environment, ensuring personal and team safety while adhering to industry regulations and standards

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

001: Occupational Health and Safety

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand Workplace Health and Safety Regulations	1.1	Explain key OHS legislation and regulations relevant to Drone Technology									
	1.2	Identify the roles and responsibilities of individuals and organizations in maintaining a safe work environment									
	1.3	Describe the process for reporting health and safety risks and incidents.									
LO 2: Identify Workplace Hazards and Implement Control Measures	2.1	Identify common hazards in Drone Technology work environments, including electrical, ergonomic, and data-related risks									
	2.2	Assess the severity and likelihood of potential hazards in specific Drone tasks.									
	2.3	Implement appropriate control measures, such as safe cabling practices, ergonomic workstation setup, and electrical safety protocols.									
LO 3: Apply Emergency Procedures and First Aid in the Workplace	3.1	Demonstrate the correct procedure for responding to workplace emergencies, such as electrical fires or equipment malfunctions.									
	3.2	Perform basic first aid techniques, including treating minor injuries and using first aid equipment									
	3.3	Communicate and coordinate effectively with emergency services and other relevant personnel during a workplace incident.									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 002: Teamwork

Unit Reference Number:

NSQ Level: 3

Credit Value: 1

Guided Learning Hours: 10

Unit Purpose:

This unit is designed to equip learners' abilities to work effectively within IT teams, fostering collaboration, problem-solving, and the achievement of shared goals.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

UNIT 002: Teamwork

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand the Roles and Responsibilities within a Team	1.1	Identify the different roles and functions within an Drone Technology team (e.g., network engineers, system administrators, software developers).									
	1.2	Describe the key responsibilities and contributions of each team member.									
	1.3	Recognize the importance of each role in achieving the team's objectives.									
LO 2: Foster Positive Working Relationships within a Team	2.1	Demonstrate techniques for effective interpersonal communication and conflict resolution in a team environment.									
	2.2	Show the ability to provide constructive feedback and actively listen to others' contributions									
	2.3	Promote inclusivity and collaboration among team members to ensure participation and engagement from all.									
LO 3: Contribute to Team Problem-Solving and Decision-Making	3.1	Participate in group discussions to identify and analyse Drone Technology related problems.									
	3.2	Suggest innovative solutions and support team decision-making processes.									
	3.3	Evaluate the effectiveness of team decisions and propose improvements where necessary.									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 003: Communication

Unit Reference Number:

NSQ Level: 3

Credit Value: 1

Guided Learning Hours: 10

Unit Purpose:

This unit is designed to equip learners' communication skills, enabling them to convey technical information effectively and collaborate with both technical and non-technical stakeholders.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

UNIT 003: Communication

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Communicate Technical Information Clearly and Accurately	1.1	Explain Drone concepts, procedures, and solutions in a manner appropriate to the audience, whether technical or non-technical.									
	1.2	Use industry-standard terminology correctly when describing technical processes									
	1.3	Adapt communication methods to suit the context, such as written reports, emails, or verbal presentations.									
LO 2: Utilize Digital Communication Tools Effectively	2.1	Use digital tools for communication, such as email, messaging platforms, and collaboration software (e.g., Slack, Teams).									
	2.2	Adhere to best practices for professional digital communication, including email etiquette and secure file sharing.									
	2.3	Use collaborative tools to share and receive feedback on documents, code, or project updates.									
LO 3: Listen and Respond Appropriately in a Professional Context	3.1	Demonstrate active listening skills during team discussions or client meetings.									
	3.2	Respond to questions, concerns, and feedback clearly and effectively.									
	3.3	Clarify misunderstandings and summarize discussions to ensure mutual understanding.									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 004: FUNDAMENTALS OF DRONE TECHNOLOGY

Unit Reference Number: ICT/DRT/004/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills of fundamentals of Drone Technology.*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 004: Fundamentals of Drone Technology

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: Understand the concept of Drone Technology	1.1	Explain Drone Evolution									
	1.2	Explain Impact of Drones in various industries									
	1.3	Explain Applications of Drone Technology									
LO 2: **Understand Types of Drones**	2.1	Mention types of Drones									
	2.2	Explain Multirotor, Fixed-wing and hybrid drones.									
	2.3	Explain application of Drones in Agriculture, Survey, Photography.									
LO 3: **Know Drone Components**	3.1	Mention Drone components									
	3.2	Explain the functions of Brushless motors and propellers									
	3.3	Explain the functions of Sensors and Flight controllers									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 005: DRONE MECHANICS AND FLIGHT PHYSICS IN

Unit Reference Number: ICT/DRT/005/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills of drone mechanics and flight physics*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 005: Drone Mechanics and Flight Physics

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: Understand Principles of Aerodynamics	1.1	Define Aerodynamics									
	1.2	State the principles of Aerodynamics									
	1.3	Explain the following: a. Lift b. Thrust c. Stability									
LO 2: Know Drone Control Systems	2.1	Explain Control systems									
	2.2	Explain controllers									
	2.3	Explain Gyroscopes									
	2.4	Explain Accelerometers									
LO 3: **Know Drone Electronics**	3.1	Describe Basic Drone Circuitry for Quadcopters									
	3.2	Explain Functions of the Power distribution									
	3.3	Explain safety considerations of power distributions									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 006: DRONE ASSEMBLY AND MAINTENANCE

Unit Reference Number: ICT/DRT/006/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills in Drone Assembly and Maintenance.*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 006: Drone Assembly and Maintenance

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: **Know Parts Assembly**	1.1	Identify different parts of a Drone									
	1.2	Assemble the different parts.									
	1.3	Use kits to practices Assembly									
LO 2: **Know Battery and Power Management**	2.1	Define Power management in Drone Technology									
	2.2	Explain Battery Capacity									
	2.3	Describe Battery Management for Endurance flight									
	2.4	Demonstrate battery Safety									
LO 3: **Know Maintenance and Troubleshooting**	3.1	Carryout regular maintenance									
	3.2	Diagnose problems									
	3.3	Carryout corrective practices									
	3.4	Carryout preventive practices									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 7: FLIGHT OPERATIONS AND TRAINING

Unit Reference Number: ICT/DRT/007/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills of Flight Operations*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 007: Flight Operations and Training

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: Understand Flight Controls and Operations	1.1	Setup the controller									
	1.2	Configure the Controller									
	1.3	Calibrate the controller									
LO 2: **Know Flight techniques**	2.1	Practice take-off									
	2.2	Demonstrate Landing									
	2.3	Demonstrate hovering									
	2.4	Practice orientation control									
LO 3: **Know Maintenance and Troubleshooting**	3.1	Carryout regular maintenance									
	3.2	Diagnose problems									
	3.3	Carryout corrective practices									
	3.4	Carryout preventive practices									
LO 4: **Know Safety Protocols**	4.1	Identify the importance of pre-flight inspections									
	4.2	Checklist for drone hardware, software, and battery conditions.									
	4.3	Explain drone flight regulations and restrictions									
	4.4	Assess weather conditions before flight									
	4.5	Manage Challenges like wind, rain and low visibility									
LO 5: **Know Emergency procedures**	5.1	Carryout controlled emergency landing									
	5.2	Identify safe landing zones.									
	5.3	Use on-board sensors and manual navigation to avoid obstacles.									
	5.4	Carryout strategies for handling unexpected obstruction.									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 8: AUTONOMOUS FLIGHT AND MISSION PLANNING

Unit Reference Number: ICT/DRT/08/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills in Autonomous Flight and Mission Planning.*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 008: Autonomous Flight and Mission Planning

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: Know Autonomous Flight	1.1	Explain waypoint navigation									
	1.2	Explain Mission programming									
	1.3	Demonstrate waypoint navigation									
LO 2: Understand Autonomous Flight	2.1	Practice Path Accuracy									
	2.2	Explain obstacle detection									
	2.3	Carryout flight time management									
	2.4	Perform automated mission using Software									
LO 3: Know mission Planning Essentials	3.1	Plan route for survey									
	3.2	Plan route for mapping									
	3.3	Carryout data collection									
	3.4	Carry out Risk assessment and mitigation.									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

NATIONAL SKILLS QUALIFICATION

LEVEL 3: DRONE TECHNOLOGY

Unit 9: APPLICATIONS, CAREERS AND CERTIFICATIONS IN DRONE TECHNOLOGY

Unit Reference Number: ICT/DRT/009/L3

NSQ Level: 3

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: *This unit is designed to equip learners with knowledge and skills of Applications and careers in Drone Technology.*

Unit assessment requirements/ evidence requirements:

These assessments ensure that learners can apply their knowledge in practical settings and produce evidence of their skills through various forms of documentation.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

(This depends on the Trade Areas to be assessed)

UNIT 009: Applications, Career and Certifications in Drone Technology.

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO1: **Understand Applications of Drones**	1.1	Explain the basics of Capturing high-quality images.									
	1.2	Explain the basics of Capturing high quality videos.									
	1.3	Explain application of Drone in the area Agriculture in health assessment of crops									
	1.4	Explain application of drones in soil analysis.									
	1.5	Explain the application of Drone in wildlife monitoring.									
	1.6	Explain application of Drone in forest conservation.									
LO 2: **Know Entrepreneurship and Career Opportunities in Drones**	2.1	Identify the opportunities in Photography									
	2.2	Identify the opportunities in Surveying an area.									
	2.3	Identify the opportunities in inspection services									
	2.4	Practice basic skills in promoting drone services									
	2.5	Identify freelance opportunity in the Drone Ecosystem									
	2.6	Explain the corporate roles available in the Drone Space.									
	2.7	Choose an area to specialise									
LO 3: **Know Advanced Applications and Certification Resources**	3.1	Explain applications in Inspection									
	3.2	Explain applications in search and Rescue									
	3.3	Explain applications in logistics.									
	3.4	Explain applications in Mapping									
	3.5	Explain Certification bodies for Drone Pilots and Organizations									

Learner's Signature	Date
Assessor's Signature	Date
IQA's Signature	Date
EQA's Signature	Date

LIST OF PARTICIPANTS FOR THE CRITIQUE WORKSHOP

S/N	Full Name	Organization	Address	Email	Telephone
1.	ThankGod Fortune Abbey	Pathcademy Educational Consult Ltd	Yenagoa, Bayelsa State	primekind@gmail.com	07064812810
2.	Dr. Promise Jumbo Animi	University of Port Harcourt	Info Tech Dept., Choba, Port Harcourt, Rivers State	2nicepromise@gmail.com	08037961001
3.	Constance Soye Young-Harry	Ministry of Education	Road 12, House 14, Trans-Amadi Garden, Port Harcourt, Rivers State.	constanceyoundharry@gmail.com	08032684914
4.	Uchechi Nwankwo	Technology Education and Qualification Limited	Port Harcourt River State	adanma4u@yahoo.com	08036775323
5.	Ikechukwu Jacob Imesi	MO Solicitors	4 Trinity Close, Olodi, Apapa, Lagos	iykejacob@gmail.com	08055900895
6.	Engr Temidayo Clement	Abia State Polytechnic, ABA, Abia State	Mechanical engineering department, Abia State Polytechnic	temidayoesenamunjor@abiastatepolytechnic.edu.ng	08134893102
7	MUHAMMAD, BILYAMINU MUSA	NBTE	PLOT B, Bida Road, Kaduna	mahogany@gmail.com	09036071291
8	Muhammad Bello Aliyu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	mbacaspet@gmail.com	08039176984
9	BENJAMIN, Prince	CPN	1321 Adesoji Aderemi Street,	pco.benjamin@gma	08132850544

	Chukwudindu		Gudu District, Apo Abuja FCT	il.com	
10	Amoo, Taofeek	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	taofeekamoo@gmail.com	08053370334
11	Olatunji Abibat	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	adehabb@gmail.com	08054263602

LIST OF PARTICIPANTS FOR VALIDATION WORKSHOP

S/N	Full Name	Organization	Address	Email	Telephone
1.	ThankGod Fortune Abbey	Pathcademy Educational Consult Ltd	Yenagoa, Bayelsa State	primekind@gmail.com	07064812810
2.	Ikechukwu Jacob Imesi	MO Solicitors	4 Trinity Close, Olodi, Apapa, Lagos	iykejacob@gmail.com	08055900895
3.	Engr Temidayo Clement	Abia State Polytechnic, ABA, Abia State	Mechanical engineering department, Abia State Polytechnic	temidayoesenamunjor@abiastatepolytechnic.edu.ng	08134893102
4	Abidemi Adejumo	Unicorn Group of companies	Mabushi Express way Abuja	Abidemi.adejumo@uniccongroup.com	09022750798
5	Abdul-Jabbar J. Ahmed	24dots media	Kanta Road Off Ahmadu Bello way, Kaduna	24dotsmedia@gmail.com	07063158433
6	Dr. Musa Hatim Koko	NBTE	PLOT B, Bida Road, Kaduna	hatimlion@gmail.com	08039606948
7	MUHAMMAD, BILYAMINU MUSA	NBTE	PLOT B, Bida Road, Kaduna	mahogany@gmail.com	09036071291
8	Muhammad Bello Aliyu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	mbacaspet@gmail.com	08039176984
9	BENJAMIN, Prince Chukwudindu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	pco.benjamin@gmail.com	08132850544

10	Muhammad Umar Auna	NBTE	Kaduna	Muhammadauna.mu@gmail.com	09034733784