Executive Summary

Qualification	Occupational Certificate: Software Developer
Purpose	The purpose of this qualification is to prepare a learner to operate as a Software Developer. Typical learners include school leavers and those currently in employment who seek formal recognition of their competence. Qualified learners will be able to analyse a set of requirements, translate these into a working software solution using a programming language, and test, implement and maintain software applications to meet client specifications as well as functional and technical requirements.
Qualification ID	118707
NQF Level	5
Minimum Credits	220
Duration	One to two years
Field	Physical, Mathematical, Computer, and Life Sciences
Subfield	Information Technology and Computer Sciences
Quality Partner	MICT SETA
Entry Requirements	NQF Level 4 qualification

Qualification Overview

This qualification covers the full value chain of a software developer from interrogating and understanding problem statements (from end users) to building logic flows to solve identified problems and executing the necessary programming. It is an important qualification in the "suite" of qualifications in the ICT sector.

There is an abundance of international research that points to the phenomenal growth in the need for qualified software developers. With so much job growth on the horizon, software developers stand to see a bright future ahead of them.

Qualifying learners will be able to:

- Interrogate the specification and problem, interpret it into code, and articulate it in writing
- Build a logical flow using industry standard frameworks and methodologies to propose possible solutions to business challenges
- Programme effectively using a suitable programming language
- Test and maintain software and recommend improvements to ensure strong functionality and optimisation
- Function effectively, efficiently, and ethically in the workplace.

The KLM Empowered Learning X Perience

X Plore
For each of the integrated learning blocks, learners explore content on their own before engaging with others. Guided by self-study plans and diagnostic self-assessment, they formulate their own insights to share.

X Tend
Workplace application assignments allow learners to put their new learning to use on the job. Under the guidance of mentors, and with access to performance and wellness support, learners hone their skills and add value.

X Cite
Learners receive a welcome letter and an X Perience Map detailing the flow of their qualification. An orientation session helps them to understand the benefits and career options linked to the qualification.

X Change
Learners attend facilitator-led sessions, either in class or online, to share their learning and refine their skills in a safe environment. Collaborative activities and peer feedback build learning synergy and allow learners to master specific skills.

X Cel
Each learner's progress is measured against assessment criteria through formative and summative assessment. Final examinations and presentations are used to obtain an accurate picture of overall understanding and mastery of the content.

Qualification Outline

- The Occupational Certificate: Software Developer is presented over SIX learning blocks – covering both Knowledge Modules (KM) and Practical Modules (PM).

- Workplace Experience Modules are completed throughout the learning journey and assessed every quarter.

- Formative and summative assessments are conducted at regular intervals to prepare learners for the External Integrated Summative Assessment (EISA).

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INTRODUCTION TO COMPUTERS AND COMPUTING (19 credits)

ID	Title	Level	Credits
KM-01	Computers and Computing Systems	4	12
KM-05	Computing Theory	4	2
KM-04	Logical Thinking and Basic Calculations	4	2
PM-06	Apply Logical Thinking and Maths	4	3

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DATA MANAGEMENT AND VISUALISATION (37 credits)

ID	Title	Level	Credits
KM-02	Desktop and Professional Software to Communicate and Visualise Information	4	8
KM-03	Automated Web Scraping as a Data Source	5	8
KM-08	Obtaining, Querying, Manipulating, and Presenting Data with and without MVC	5	6
PM-01	Use Software to Communicate and Visualise Information	4	3
PM-02	Use and Manage Spreadsheets and Workbooks	4	3
PM-03	Use Desktop Applications to Analyse, Visualise, and Report on Data	5	3
PM-04	Use a Visual Analytics Platform and Visualisation Tools to Analyse, Visualise, and Report on Data	5	3
PM-05	Query and Massage Data	5	3

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INTRODUCTION TO SOFTWARE DEVELOPMENT (38 credits)

ID	Title	Level	Credits
KM-07	UML as Standard Modelling Language for Software and Systems Development	5	4
KM-09	Software Development Life Cycle, Programming Languages, Algorithms, and Security	5	3
PM-07	Apply Code to Use a Software Toolkit/Platform in the Field of Study or Employment	5	3

ID	Title	Level	Credits
PM-11	Develop Software Using Python	5	12
PM-12	Apply the Development Cycle when Developing Software	5	16

SOFTWARE DEVELOPMENT PART 1 (32 credits)

ID	Title	Level	Credits
KM-06	Software Development with HTML5, Opensource Frameworks, and Libraries	5	16
PM-08	Develop Software Using HTML5, Opensource Frameworks, and Libraries	5	16

SOFTWARE DEVELOPMENT PART 2 (16 credits)

ID	Title	Level	Credits
PM-09	Design and Build Web Applications, Desktop Graphical User Interfaces, or Mobile Apps	5	8
PM-10	Use a Cloud Automation Platform to Create Solutions	4	8

SOFTWARE DEVELOPMENT ESSENTIALS (13 credits)

ID	Title	Level	Credits
KM-10	Introduction to Governance, Legislation, and Ethics	4	2
KM-11	4IR and Future Skills	4	2
KM-12	Design Thinking Skills for Innovation	4	1
PM-13	Participate in a Design Thinking for Innovation Workshop	4	4
PM-14	Function Ethically and Effectively in a Team	4	4

Work Experience Modules

The work experience modules give the learner an opportunity to apply the software development lifecycle under authentic working conditions and to develop confidence by working with a mentor. They also expose learners to the complexities of dealing with workplace demands, the pressures of work, and the dynamics of stakeholder management.

ID	Title	Level	Credits
WM-01	Technical Requirement Analysis and Refinement	5	15
WM-02	Modelling Processes	5	15
WM-03	Programming for Software Solution Development	5	25
WM-04	Capstone Project	5	10