klm
EMPOWERED

Executive Summary

Qualification	Occupational Certificate AI Software Developer
Purpose	The purpose of this qualification is to prepare a learner to operate as an AI Software Developer. Artificial Intelligence Software Developers build Artificial Intelligence (AI) functionality into software applications through integrating and implementing AI algorithms and logic into the deliverables of an Information Technology (IT) project. Developers teach the machine to solve problems the way a human would through the use of programming. They create, test and deploy code. These developers also assist in converting machine learning Application Programming Interface (APIs) so that other applications can use them.
Qualification ID	118792
NQF Level	5
Minimum Credits	209
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

klm
EMPOWERED

Head Office
3rd Floor, South Wing
20 Skeen Boulevard
Bedfordview

Centre of Leadership Excellence
3rd Floor, North Wing
20 Skeen Boulevard
Bedfordview

Telephone
+27 11 856 4700

Website
www.klmempowered.com

Contacts
Lyn Mansour: +27 82 330 5160
Portia Matuludi: +27 67 421 0051
Clayton Lendrum: +27 66 478 2706

Qualification Overview

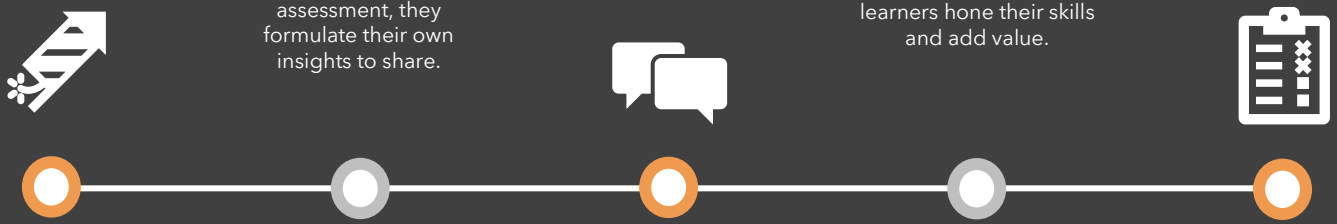
AI is transforming the way organisations operate, but without a workforce skilled in technology, any effort by businesses to embrace the adoption of AI initiatives will fail. This qualification focusses on establishing a firm understanding of AI technology, its applications and its use cases.

This Occupational Certificate: Artificial Intelligence Software Developer fills a glaring gap at the entry level of this specialist field and career path. Software developers create the applications or systems that run on a computer or another device. AI software developers build AI functionality into software applications. The role is generally focused on integrating and implementing AI algorithms and logic into the deliverable. AI, machine learning, neural networks and deep learning is a unique field, using specialist tools to create intelligence that mimics human interaction.

Qualifying learners will be able to:

- Interpret solution design documentation and develop AI solutions
- Train the AI model through a machine learning process and test to ensure that model accuracy is strictly maintained
- Deploy the AI solution
- Maintain the solution to ensure that model accuracy is maintained

The KLM Empowered Learning X Perience



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 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 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 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 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: AI Software Developer consists of the following Knowledge, Practical and Work Experience Modules.
- 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).

Knowledge Modules

ID	Title	Level	Credits
KM-01	Overview of Artificial Intelligence	4	2
KM-02	Introduction to Mathematics and Statistics	4	10
KM-03	Analytical Thinking and Problem Solving	4	3
KM-04	Data, Databases, and Data Visualisation	4	8
KM-05	Computing Theory	4	8
KM-06	Introduction to AI, Machine Learning, and Deep Learning	4	5
KM-07	Artificial Intelligence	5	12
KM-08	Machine Learning	5	16
KM-09	Deep Learning	5	16
KM-10	Introduction to Governance, Legislation, and Ethics	4	1
KM-11	Fundamentals of Design Thinking and Innovation	4	1
KM-12	4IR and Future Skills	4	4

Practical Modules

ID	Title	Level	Credits
PM-01	Mathematics and Statistics for Programming	4	8
PM-02	Problem Definition, Analytical Thinking, and Decision Making	4	2
PM-03	Access, Analyse, and Visualise Structured Data Using Spreadsheets	4	4
PM-04	Use SQL to Communicate with a Database	5	4
PM-05	Build a Simple AI Solution Using Python	5	8
PM-06	Use Python Data Scraping to Populate Database Tables in SQL	5	4
PM-07	Use Machine Learning to Build an AI Solution in Python	5	6

PM-08	Use Deep Learning to Build an AI Neural Network Architecture in Python	5	10
PM-09	Use Deep Learning to Build an AI Neural Network Architecture in TensorFlow	5	10
PM-10	Function Ethically and Effectively as a Member of a Multidisciplinary Team	4	3
PM-11	Participate in a Design Thinking for Innovation Workshop	4	4

Work Experience Modules

The focus of the work experience modules is to provide the learner an opportunity to implement artificial intelligence solutions under authentic working conditions and to develop confidence by working under the supervision of a workplace mentor. This also provides for the exposure of 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	AI Solution Design Interpretation and Development	5	20
WM-02	AI Solution Performance Testing	5	20
WM-03	AI Solution Deployment, Modification, and Improvement	5	20