

SAQA ID
118707

DURATION
18 Months

CREDITS
220

QCTO
SETA

Occupational Certificate:
**SOFTWARE
DEVELOPER**
NQF Level 5



WHO SHOULD STUDY THIS COURSE?

The purpose of this qualification is to prepare a learner to operate as a Software Developer.

A Software Developer analyses a set of requirements, translates these into a working software solution using a programming language. They test, implement and maintain software applications to meet client specifications as well as functional and technical requirements.

A qualified learner will be able to:

- Interrogate the specification and problem and interpret it into code and articulate in writing.
- Build a logical flow using the framework and methodologies at their disposal to propose possible solutions to business challenges.
- Programme effectively using a suitable programming language to develop and test new solutions and update existing solutions.

Rationale

Realizing the importance and future impact of the 4IR on the economy of South Africa and its competitiveness, the Minister of Communications gazetted the Presidential Commission on the Fourth Industrial Revolution (PC4IR) (Government Gazette No. 42388, 9 April 2019). By March 2020 this Commission delivered a report with wide ranging recommendations for Human Capital Development that will drive the 4IR forward. It clearly indicated the speed at which companies will have to invest in big data analysis, web-enabled market investment and the use of cloud computing and machine learning.

Software development is central to these initiatives. Software developers are the creative minds behind computer programs. Some develop applications that allow people to do specific tasks on a computer or another device. Others develop the underlying systems that run the devices or that control networks. The software developer is the important cog in designing advanced computerized technologies. South Africa has a scarcity of software developers and there is a clear need for a qualification focusing specifically on the training and education of software developers.

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, execute the necessary programming in an appropriate programming language and finally soft skills issues to function effectively, efficiently, and ethically in the workplace. It is an important qualification in the “suite” of qualifications in the ICT sector.

Exit Level Outcomes

- Interrogate the specification and problem and interpret it into code and articulate in writing.
- Build a logical flow using industry standard frameworks and methodologies to propose possible solutions to business challenges to meet both functional and technical requirements.
- Programme effectively using a suitable programming language to develop new solutions and update existing solutions.
- Test and maintain software and recommend improvements to ensure strong functionality and optimisation to meet both functional and technical requirements.
- Function effectively, efficiently, and ethically in the workplace to achieve company and team goals and targets.

ASSOCIATED ASSESSMENT CRITERIA

Exit Level Outcome 1:

Support the technical design process by participating in the analysis of technical application requirements. Identify areas for modification in existing programs. Gather information from consumers about program functionality. Analyse User requirements and convert requirements to design documents. Develop technical specifications and plans based on the above analysis of the requirements and consumer feedback.

Exit Level Outcome 2:

Implement technical specifications and plans based on the above analysis of the requirements and consumer feedback. Apply analytical skills to model a solution that meets organisational requirements. Develop technical documentation to guide future software development projects. Design a wireframe of the proposed amendments, or new solution for sign off by client under supervision.

Exit Level Outcome 3:

Execute conversion plans, document possible improvements, and identify disruptions in the processes. Produce efficient and elegant code based on requirements to implement new software programs. Design Algorithms and appropriate UML (unified modelling language) diagrams to create new software programs and systems. Independently install, customize, and integrate commercial software packages. Timely compile comprehensive, accurate documentation and or reports as requested. Develop and execute identified modifications in existing programs.

Exit Level Outcome 4:

Conduct root cause analysis of system issues, review new and/or existing code and perform unit testing in collaboration with experienced team members. Execute troubleshooting and debugging to maintain and improve software performance. Test new programs and applications applying suitable test procedures and document test procedures and results. Observe, compile, and assess User feedback to identify opportunities to improve software performance. Maintain and upgrade existing systems.

Exit Level Outcome 5:

Compile code of conduct and ethical requirements within line with governance policies and procedures. Maintain effective and professional communication with internal customers, management, and technical support colleagues. Demonstrate collaboration with other developers, management, departments, and customers to identify end-user requirements and specifications. Provide comprehensive support to internal customers to achieve resolution of outstanding problems or issues.

Integrated Assessment:

Integrated Formative Assessment

The skills development provider will use the curriculum to guide them on the stipulated internal assessment criteria and weighting. They will also apply the scope of practical skills and applied knowledge as stipulated by the internal assessment criteria. This formative assessment together with work experience leads to entrance in the integrated external summative assessment.

Integrated summative assessment.

An external integrated summative assessment, conducted through the relevant QCTO Assessment Quality partner is required for the issuing of this qualification. The external integrated summative

assessment will focus on the exit level outcomes and associated assessment criteria.

The external integrated summative assessment will be conducted through a theoretical assessment and the evaluation of practical tasks at decentralized approved assessment sites in a simulated environment and conducted by an assessor(s) registered with the relevant AQP.

ARTICULATION OPTIONS

- Occupational Certificate: Computer Technician; NQF Level 5.
- Advanced Certificate in Information Technology Governance, NQF Level 6.

Qualifying for External Assessment

The external integrated summative assessment will be conducted through a theoretical assessment and the evaluation of practical tasks at decentralised approved assessment sites in a simulated environment and conducted by an assessor(s) registered with the relevant AQP.

ARTICULATION OPTIONS

- The minimum entry requirement for this qualification is:
- NQF Level 4 qualification.

Unit Standard		
KNOWLEDGE MODULES	Computers and Computing Systems	4 12
	Desktop and Professional Software to Communicate and Visualise Information	4 8
	Automated Web Scraping as a Data Source	5 8
	Logical Thinking and Basic Calculations	4 2
	Computing Theory	4 2
	Software Development with HTML5, Opensource Frameworks and Libraries	5 16
	UML as Standard Modelling Language for Software and Systems Development,	5 4
	Obtaining, Querying, Manipulating and Presenting Data with and without MVC	5 6
	Software Development Life Cycle, Programming Languages, Algorithms and Security	5 3
	Introduction to Governance, Legislation and Ethics	4 2
	4IR and Future Skills	4 1
	Design Thinking Principles for Innovation	4 1

PRACTICAL SKILLS MODULES	Unit Standard		
	Use Software to Communicate and Visualise Information	4	3
	Use and Manage Spreadsheets and Workbooks	4	3
	Use Desktop Applications to Analyse, Visualise and Report on Data	5	3
	Use a Visual Analytics Platform and Visualisation Tools to Analyse, Visualise and report on Data	5	3
	Query and Massage Data	5	3
	Apply Logical Thinking and Maths	4	3
	Apply Code to use a Software Toolkit/Platform in the Field of Study or Employment	5	3
	Develop Software using HTML5, Opensource Frameworks and Libraries,	5	16
	Develop Software using Python	5	12
	Apply the Development Cycle when Developing Software	5	16
	Participate in a Design Thinking for Innovation Workshop	4	4
	Function Ethically and Effectively in a Team	4	4
	Design and Build Web Applications, Desktop Graphical User Interfaces or Mobile Apps	5	8
	Use a Cloud Automation Platform to Create Solutions	4	8

89

WORK XP	Unit Standard		
	Technical Requirement Analysis and Refinement	5	15
	Modelling Processes	5	15
	Programming for Software Solution Development	5	25
	Capstone project	5	10

65

CONTACT US

T: 011 568 6629

E: info@apexu.co.za

A: 100 West Street, Block C. Wierda Valley, Sandton.

apexu.co.za
