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## Target Audience

Any black South African over the age of 18, not currently employed or currently underemployed

## Prerequisites

* English literacy
* Matric maths
* No technical prerequisites, just a strong motivation to challenge oneself and learn new things
* Ability to work in an agile, human-centred way

## Duration

* 160 hours of training in HCD and Agile through the Umuzi workshops and crash course
* 1360 hours of subject-specific, technical training over 8 months at Umuzi proper
* 3 months of full-time work experience with Umuzi’s world-class employer-partners.

## Cost

* 100% free for students
* Students receive a stipend of R3500 per month for living costs

## Objectives of Training

Umuzi helps talented young South Africans move from unemployment into high-value careers.

Umuzi’s tech programmes are focussed on the most in-demand skills and technologies in the current market: full stack JavaScript for web development, Python and SQL for data science and data engineering.

Umuzi develops all-round professionals, with a focus on soft skills, Human Centred Design and Agile Scrum methodology.

## Web Development Track

### Web Development: Job Description

A web developer is someone who designs and implements modern, responsive websites and webapps. They must be strong at technical web development skills (full-stack Javascript, CSS and HTML, and associated libraries and frameworks); have strong visual and design skills; and strong modern engineering methodologies (including Git and Agile).

### Web Development: Programme

**TECHNICAL**

*Languages:*

HTML, CSS, JavaScript

*Frameworks:*

Node.JS/Express

JQuery

Bootstrap, CSS grid

[React, Angular]

*Databases:*

REST APIs, talking to a database

MongoDB

MySQL

**PROFESSIONAL**

Human Centred Design

Agile

## Data Science Track

### Data Science: Job Description

Using computer science and applied statistics, data scientists find valuable patterns where other people just see noise. Harvard Business Review says Data Scientist is "The Sexiest Job of the 21st Century," and we agree. It’s a rare combination of interesting challenges and high-value opportunities. Data skills are a superpower, and with great power comes great job responsibilities. Our data scientist learn basic mathematics, programming, data extraction and manipulation, and data analysis and interpretation skills.

### Data Science: Programme

**TECHNICAL**

**Environments and languages**

Git

Linux & bash scripting

Python

MySQL

Jupyter Notebooks

Tableau / Redash

CSS & HTML

**Content:**

*Mathematics and statistics*

Basic algebra

Hypothesis testing

Distributions, central tendency and variation

Effect sizes and confidence intervals

*Programming*

Functions, variables, data types

Object-oriented programming

Test driven development

Debugging

*Data extraction and analytics*

Importing, cleaning and manipulation of data

Database management and quality control

Data visualisation

Data exploration, summarisation and reporting

Statistical learning techniques, incl. regression, classification and clustering

Survey design

Interacting with APIs

**PROFESSIONAL**

Human Centred Design Thinking

Agile

## Data Engineering Track

### Data Engineering: Job Description

Data Engineers can *Extract, Transform and Load* data from many different sources to create unified data warehouses that enable the Data Scientists to build business-relevant analyses and make important business decisions.

### Data Engineering: Programme

**TECHNICAL**

Basic Linux / Authentication security

Object-Oriented Python

Basic SQL

Relational DB

*Computer Science*

Time and Space complexity

Data Structuring

*Extraction*

REST APIs

Databases

SaaS API (e.g. Google Forms, FB, etc.)

Web scraping

*Data Transformation*

Advanced SQL, Python

[Using Intermediate Queues (Kafka, RabbitMQ)]

Data transformation at scale

*Data Loading*

(My)SQL, DB schema

Architecture / DB schema

*Optional extras:*

Deploy/write / launch micro-services e.g. using Docker

Cloud services (AWS, Azure, etc)

Web frameworks (Django, Flask)