Co-funded by the European Union

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Norwegian Embassy
Islamabad

ARTIFICIAL INTELLIGENCE DATA TECHNICIAN

CBT CURRICULUM

National Vocational Certificate Level 1

Version 1 - November, 2019

NAVTTC

Implemented by
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Published by
National Vocational and Technical Training Commission
Government of Pakistan

Headquarter
Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
www.navttc.org

Responsible
Director General Skills Standard and Curricula, National Vocational and Technical Training Commission
National Deputy Head, TVET Sector Support Programme, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Layout & design
SAP Communications

Photo Credits
TVET Sector Support Programme

This document has been produced with the technical assistance of the TVET Sector Support Programme, which is funded by the European Union, the Federal Republic of Germany and the Royal Norwegian Embassy and has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs), Punjab Vocational Training Council (PVTC), Qualification Awarding Bodies (QABs)s and private sector organizations.

Document Version
November, 2019
Islamabad, Pakistan

ARTIFICIAL INTELLIGENCE DATA TECHNICIAN

CBT CURRICULUM

National Vocational Certificate Level 1

Version 1 - November, 2019

Introduction

Definition/ Description of the training program for Artificial Intelligence Data Technician

In order to build the capacity of technical and vocational training institutes in Pakistan through provision of demand driven competencies-based trainings in Information technology sector the NAVTTC, and TEVT Sector Support Program (TSSP) have joined hands together to develop qualifications for Information Technology sector. These qualifications will not only build the capacity of existing workers of this sector but also support the youth to acquire skills best fit for this sector. The benefits and impact of development of these qualifications will be on both demand and supply side.

Based upon this demand of industry these competency-based qualifications for Artificial Intelligence Data Technician are developed under National Vocational Qualification Framework (NVQF) (Level 1 to 4). The qualifications mainly cover competencies along with related knowledge and professional skills which are essential for getting a job or self-employed.

The qualifications are also in line with the vision of Pakistan's National Skills Strategy (NSS), National TVET Policy and National Vocational Qualification Framework (NVQF). This provides policy directions, support and an enabling environment to the public and private sectors to impart training for skills development to enhance social and economic profile. The National Vocational & Technical Training Commission (NAVTTC) has approved the Qualification Development Committee (QDC). The QDC consists experts from the relevant industries from different geographical locations across Pakistan and academicians who were consulted during the development process to ensure input and ownership of all the stakeholders. The National Competency Standards could be used as a referral document for the development of curricula to be used by training institutions.

Purpose of the training program

The purpose of the training is to provide skilled manpower to improve the existing capacity of Information Technology sector. This training will provide the requisite skills to the trainees to become Artificial Intelligence Data Technician. It will enable the participants to meet the challenges in the field of Artificial Intelligence. Further, to improve the skill level of the technician and prepare them for the information technology industry to meet the market competition nationally and internationally.

The core purpose of this qualification is to produce employable Artificial Intelligence Data Technicians who can work as Artificial Intelligence Data Technician according to national and international standards. In addition, this qualification will prepare unemployable youth to employees in this sector.

Overall objectives of training program

The Artificial Intelligence Data Technician qualification from level 1- 4 consists of theoretical and practical details required for Artificial Intelligence Data Technician in information technology industries. However, this will require providing additional input on

entrepreneurship development for the one who is willing to start his/her own business. The main objective of the qualification is to prepare Artificial Intelligence Data technician having set of skills as follows:

- Comply with Work Health and Safety Policies
- Obey the Workplace Policies and Procedures
- Follow Basic Communication Skills (General)
- Demonstrate Basic Literacy Skills
- Operate Computer Functions (General)
- Use Word Processing Software
- Use of Spreadsheet
- Comply Personal Health and Safety Guidelines
- Communicate the Workplace Policy and Procedure
- Perform Basic Communication (Specific)
- Demonstrate Basic Numeracy Skills
- Use Multimedia Processing
- Pre-Process Data
- Perform Basic Computer Application (Specific)
- Apply Work Health and Safety Practices (WHS)
- Identify and Implement Workplace Policy and Procedures
- Communicate at Workplace
- Manage Personal Finances
- Code in Programming Language suitable for AI
- Setup Environment
- Perform Computer Application Skills
- Contribute to Work Related Health and Safety (WHS) Initiatives
- Comply with Workplace Policy and Procedures
- Perform Advanced Communication
- Manage Human Resource Services
- Scrape data from the web
- Process Images through Image Processing software
- Work with Data Manipulation Toolkit
- Work with Multidimensional Arrays' Manipulation and Computation Package
- Develop Advance Computer Application Skills
- Develop Entrepreneurial Skills

Competencies to be gained after completion of course

At the end of the course, the trainee must have attained the following competencies:

1. Comply with Work Health and Safety Policies
2. Obey the Workplace Policies and Procedures
3. Follow Basic Communication Skills (General)
4. Demonstrate Basic Literacy Skills
5. Operate Computer Functions (General)
6. Use Word Processing Software
7. Use of Spreadsheet
8. Comply Personal Health and Safety Guidelines
9. Communicate the Workplace Policy and Procedure
10. Perform Basic Communication (Specific)
11. Demonstrate Basic Numeracy Skills
12. Use Multimedia Processing
13. Pre-Process Data
14. Perform Basic Computer Application (Specific)
15. Apply Work Health and Safety Practices (WHS)
16. Identify and Implement Workplace Policy and Procedures
17. Communicate at Workplace
18. Manage Personal Finances
19. Code in Programming Language suitable for AI
20. Setup Environment
21. Perform Computer Application Skills
22. Contribute to Work Related Health and Safety (WHS) Initiatives
23. Comply with Workplace Policy and Procedures
24. Perform Advanced Communication
25. Manage Human Resource Services
26. Scrape data from the web
27. Process Images through Image Processing software
28. Work with Data Manipulation Toolkit
29. Work with Multidimensional Arrays' Manipulation and Computation Package
30. Develop Advance Computer Application Skills
31. Develop Entrepreneurial Skills

Possible available job opportunities available immediately and later in the future

Artificial Intelligence Data Technician are employed in Information Technology Sector. Experienced Artificial Intelligence Data Technician may advance through promotions with the same employer or by moving to more advanced positions with other employers. After completing level – 1 the possible job title can be:

- Data Entry Operator
- Data Recorder

Trainee entry level

- Middle (Grade 8) for level-1
- Level-1 for level-2
- Level-2 for level-3
- Level-3 for level-4

Minimum qualification for trainer

- BS in (Artificial Intelligence/Data Science/Computer Science/Computer Engineering/Software Engineering/Information Technology/Electrical/Mechatronics) or relevant fields.

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 20 trainees

Medium of instruction i.e. language of instruction

Instructions will be in English/Urdu language.

Duration of the course (Total time, Theory & Practical time)

This curriculum document for level 1 comprises of 06 modules. The recommended delivery time for technical competency is 100 hours.

- Delivery of the course can therefore be full time (8 hours a business day), 6 days a week, for 24 months (on average 26 working days a month) for each level. Training providers are at liberty to develop other models of delivery, including part-time and evening delivery. OR
- Delivery of the course can therefore be full time (9 hours a business day), 5 days a week, for 24 months (on average 22 working days a month). Training providers are at liberty to develop other models of delivery, including part-time and evening delivery.

The full structure of the course is as follows:

Sr. No.	Module	Theory hours	Workplace hours	Total hours
01	Comply with Work Health and Safety Policies			
02	Obey the Workplace Policies and Procedures			
03	Follow Basic Communication Skills (General)			
04	Demonstrate Basic Literacy Skills			
05	Operate Computer Functions (General)			
06	Use Word Processing Software	20	80	100

Sequence of the modules

This qualification is made up of 06 modules. A suggested distribution of these modules is presented overleaf. This is not prescriptive and training providers may modify this if they wish.

The following technical module will be followed as require for the training purpose.

Module 06

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardized approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught. Each module also incorporates the industrial demand of Pakistan that make this qualification unique to Pakistan's industry needs.

ARTIFICIAL INTELLIGENCE DATA TECHNICIAN

Module-7

CBT CURRICULUM

National Vocational Certificate Level 1

Version 2 - November, 2019

Summary – Overview of the curriculum

After completion of this level the candidate will be able to know and practice health and safety at workplace, obey workplace policies, communicate better at workplace and operate basic computer functions.

Modules

Module 07: Use Word Processing Software (061900924)

Objective of the Module: After the completion of this module the candidate will be able to operate and execute specified set of commands and tasks over the Word processing software.

Duration: 100 hrs. Theory: 20 hrs. Practice: 80 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Material/Tools Required	Learning Place
LU1: Create a File	**You will be able to** 1. Launch word processing application 2. Create a blank document 3. Create from template 4. Create content 5. Identify saved location 6. Save a document in desired format	• Demonstrate different ways to open word. • Demonstrate various options that are found on word opening screen. • Show Highlight Menus, Taskbar, Ruler, Scroll bar etc. Practical-1 Create a blank document/Template, type one line and then save the file on desktop. Open the file again and save in in PDF format.	**Total 15 Hrs** **Theory: 03 Hrs** **Practical: 12 Hrs**	1. Computer system 2. Microsoft Office 3. Printer and paper rim	Theory: Class Practical: Lab
LU2: Edit a File	**You will be able to** 1. Navigate in a document 2. Select text or object 3. Find desired text 4. Replace text 5. Paste copied text	• Discuss various options found in Views (Menu/Group). • Describe difference in available Views. • Explain how to navigate document using mouse and keyboard. • Explain different	**Total 20 Hrs** **Theory: 16 Hrs** **Practical: 04 Hrs**		Theory: Class Practical: Lab

	6. Paste cut text 7. Paste selected text from Clipboard 8. Apply undo & redo operations 9. Apply spell check 10. Apply grammar check 11. Insert Objects	pasting options in word processor and how clipboard retains copied items. • Describe ways to find and replace text. • Explain students about importance of ru0nning spelling and grammar check before sharing with others. • Show various options available in spelling and grammar menu. • Explain the types of objects available in Insert Menu. Practical-1 Open any two file exchange and exchange content of both file. Check for grammatical mistake in both the file. Insert common image in both the files.			
LU3: Perform Word Formatting	**You will be able to** 1. Change font size 2. Change font style 3. Change font family 4. Change font color 5. Highlight the	• Show character formatting • Demonstrate different font styles • Illustrate different font family • Demonstrate the use of highlighting • Demonstrate the use of upper and lower cases	**Total 30 Hrs** **Theory: 06 Hrs** **Practical: 24 Hrs**		Theory: Class Practical: Lab

	text 6. Apply predefined text style 7. Change case	Practical-1 Copy content form internet or any other file available/given (at least 5 lines), then make the following changes: 1. Change font style to Arial 2. Change font size to 12 3. Change its color to black 4. Highlight the text in red yellow color 5. Covert it to “Sentence Case”			
LU4: Perform Paragraph Formatting	**You will be able to** 1. Indent paragraph 2. Change line spacing 3. Align text 4. Create Lists with proper bullets and numbering	• Explain indenting types in paragraph like First Line indent, Hanging indents and negative indents. • Demonstrate text alignment and its types • Demonstrate various options available in indents and spacing groups/dialog box. • Demonstrate indentation using rulers. • Illustrate Highlight available text alignments. e.g. right, left center and justified. • Explain difference between line spacing and paragraph spacing. • Describe Listing.	**Total 20 Hrs** **Theory: 04 Hrs** **Practical: 16 Hrs**		Theory: Class Practical Lab

		• Demonstrate ordered, unordered and multilevel listing. Practical-1 Copy content form internet or any other file available/given (at least 2 paragraphs), then make the following changes: 1. Justify the paragraph 2. Set line spacing to 1 3. Create two level list (Level 1 with numbers and level two with bullets)			
LU5: Perform Page Formatting	**You will be able to** 1. Select page layout 2. Select page Orientation 3. Select page size 4. Set page margins 5. Insert headers & Footer 6. Insert line numbers 7. Insert page borders and	• Show two basic types of page orientation Show what are commonly used paper sizes • Demonstrate page margins and how they are used • Explain headers and footers and when they are required • Demonstrate line numbering and its uses • Demonstrate page borders and shading; and why they are used	**Total 10 Hrs** **Theory: 02 Hrs** **Practical: 08 Hrs**		Theory: Class Practical: Lab

	Shading	Practical-1 Make following changes to document: 1. Change the orientation of document from portrait to landscape 2. Set margins manually to 1*1 inch, 3. Set page size to A4 4. Insert page numbers in footer, and your registration number in header. 5. Insert border outside boarders and name as watermark in document.			
LU6: Print documents	**You will be able to** 1. Select printer 2. Preview print 3. Print selected pages	• Demonstrate how to add a printer in operating system. • Describe and show various options related to printing in word processor. Practical-1 Preview and adjust the margins, page alignments on legal size paper and print selected pages.	**Total 05 Hrs** **Theory: 01 Hrs** **Practical: 04 Hrs**		Theory: Class Practical: Lab

General assessment guidance for *Artificial Intelligence Data Technician*

Good practice in Pakistan makes, use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan, is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or Level, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student's performance.

Examples for direct assessment of Artificial Intelligence Data Technician Lev-1 include:

- Demonstrations, for example creating, formatting and printing of word document
- Paper-based tests, such as multiple choice or short answer questions on word processing skills.

Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly. Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Examples for direct assessment of Artificial Intelligence Data Technician Level-1 include:

- Portfolio, for example student is asked to bring develop word document written by him.

Principles of assessment

All assessments must meet all the following principles, regardless of the method of assessment used to evidence learners' attainment.

All assessments must produce outcomes that are:

1. Valid: the assessment evidence meets all assessment criteria and all learning outcomes
2. Authentic: all the work is the learner's own
3. Reliable: assessment evidence is consistent and generates outcomes that would be replicated were the assessment repeated
4. Current: assessment evidence is up-to-date
5. Sufficient: enough work is available to justify the credit value, and to enable a consistent and reliable judgement about the learner's achievement
6. Comparable: all assessment evidence is comparable in standard between assessments within a unit/qualification, and between learners of the same level
7. Manageable: all assessment places reasonable demands on all learners
8. Fair and Minimize bias: assessments are fair to all learners irrespective of their characteristics (for example, age, gender etc.)

Assessment strategy for Artificial Intelligence Data Technician Level 01 Curriculum

This curriculum consists of 06 modules:

Module-1	Comply with Work Health and Safety Policies
Module-2	Obey the Workplace Policies and Procedures
Module-3	Follow Basic Communication Skills (General)
Module-4	Demonstrate Basic Literacy Skills
Module-5	Operate Computer Functions (General)
Module-6	Use Word Processing Software

Sessional or Developmental assessment

The sessional/developmental assessment shall be conducted after completion of each module in two parts: theoretical assessment and practical assessment.

Theoretical assessment for all learning modules must consist of a written paper lasting at least 30 minutes per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall also be in two parts: theoretical assessment and practical assessment.

For the final practical assessment, each student shall be assessed over a period of 4-5 hours' session. During this period, each student must be assessed on his ability to perform a complete job for all Technical and functional modules.

Generic modules shall be assessed comprising with other modules at the time of final assessment. Practical work for this module could be assessed on a sessional basis.

Planning of assessment.

Plaining of assessment will plan by the assessment Centre as per CBT/A policy. But for development assessment it could be plan by the Trainer during the course.

As for final assessment as concern, certified assessor must be contacted and the assessor must meet the needs of the students and the training provider. For example, where two

assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 20 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 students, assessments would be carried out over a two-day period only or it could be formulated as per CBT/A Centre policies.

Complete list of tools and equipment – Non Consumable

S. No	Description
1.	Printer
2.	High performance Computer system
3.	Software Packages: • Microsoft Office

Complete list of tools and equipment - Consumable

S. No.	Items
1.	Different Tags and Locks
2.	Paper rim
3.	Process SOPs
4.	Equipment Maintenance Manuals
5.	Log Book
6.	Handbooks
7.	Design Books/ Sheets
8.	Pencils
9.	Erasers
10.	Pencil Sharpeners
11.	Paper Cutter
12.	Scissors
13.	Color Pencils
14.	White chart paper
15.	Brown Sheets
16.	White Board Markers (red, blue, green, black)
17.	Permanent markers (black)
18.	File covers

Credit values

The credit value of the National Certificate Level 1 in Artificial Intelligence Data Technician is defined by estimating the amount of time/ instruction hours required to complete each competency unit and competency standard. The NVQF uses a standard credit value of 1 credit = 10 hours of learning (Following TVET guidelines.

The credit values are as follows:

Code	Name of Duty or (Module)	Level	Credit	Category
	Comply with Work Health and Safety Policies	1		Generic
	Obey the Workplace Policies and Procedures	1		Generic
	Follow Basic Communication Skills (General)	1		Generic
101200828	Demonstrate Basic Literacy Skills	1	05	Generic
	Operate Computer Functions (General)	1	10	Generic
	Use Word Processing Software	1	10	Technical

National Vocational and Technical Training Commission (NAVTTC)

Plot 38, Kirthar Road, Sector H-9/4, Islamabad, Pakistan
+92 51 9044 322
+92 51 9044 322
info@navttc.org
www.navttc.org