QUALIFICATION FILE

Artificial Intelligence Assistant

☒ **Short Term Training (STT)** ☐ **Long Term Training (LTT)** ☐ **Apprenticeship**

☐ **Upskilling** ☐ **Dual/Flexi Qualification** ☐ **For ToT** ☐ **For ToA**

☐**General** ☐ **Multi-skill (MS)** ☐ **Cross Sectoral (CS)** ☒ **Future Skills** ☐ **OEM**

NCrF/NSQF Level: 3

Submitted By:

National Institute of Electronics and Information Technology

**NIELIT Bhawan,
Plot No. 3, PSP Pocket, Sector-8,
Dwarka, New Delhi-110077,
Phone:- 91-11-2530 8300
E-mail:- contact@nielit.gov.in**

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Section 1: Basic Details

1.	Qualification Name	Artificial Intelligence Assistant	
2.	Sector/s	IT-ITeS	
3.	Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options ☐OEM	NQR Code & version of existing/previous qualification: NA	Qualification Name of existing/previous version: NA
4.	a. OEM Name b. Qualification Name (*Wherever applicable*)	-	
5.	National Qualification Register (NQR) Code &Version (*Will be issued after NSQC approval*)	QG-03-IT-00356-2023-V1-NIELIT	6. NCrF/NSQF Level: 3
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other *(Wherever applicable specify multiple entry/exits also & provide details in annexure)*	Certificate	
8.	Brief Description of the Qualification	The **Artificial Intelligence (AI) Assistant** Qualification will cover the fundamentals of Python programming and libraries like Numpy and pandas used for data analysis. The course will also cover Visualization with Matplotlib. The course will lay stress on developing programming skills by providing practical exposure to the aspiring Python developers and also introduce to the concepts of Machine Learning. Participants from any background can develop the skills needed to become an AI Assistant	

9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience:	

S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Required Experience (with Specialization - if applicable)
1.	Grade 10th Pass	NA
2.	Grade 8th Pass with two year of (NTC/ NAC) after 8th	NA
3.	Grade 8 pass and pursuing continuous schooling in regular school with vocational subject	NA
4.	8th grade pass	2 year relevant experience

b. **Age:** No Bar

10.	**Credits Assigned to this Qualification, Subject to Assessment** *(as per National Credit Framework (NCrF))*	10 Credits	**11. Common Cost Norm Category (I/II/III)** *(wherever applicable)***:** Category-II (Information and communication technology)
12.	**Any Licensing requirements for Undertaking Training on This Qualification** *(wherever applicable)*	NA	

13.	**Training Duration by Modes of Training Delivery** *(Specify **Total Duration** as per selected training delivery modes and as per requirement of the qualification)*	☒Offline ☐Online ☐Blended

Training Delivery Modes	Theory (Hours)	Practical (Hours)	OJT Mandatory (Hours)	ES Mandatory (Hours)	Total (Hours)
Classroom (offline)	90	150	30	30	300

The mode of delivery shall be based on the regional demand and can be offered in any of the above modes mentioned.

(Refer Blended Learning Annexure-V for details)

14.	**Aligned to NCO/ISCO Code/s** *(if no code is available mention the same)*	NCO-2015/3341.1000 (Office Assistant)
15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	**Academic:** **Vertical:** Level 4: Foundation course in Artificial Intelligence Applications, Certified Artificial Intelligence (AI) Associate "Upskilling" Level 5: Courses in AI: AI -Machine learning Developer, Machine Learning (ML) Engineer -> Level 6: Courses in AI: AI - Business Intelligence Analyst, AI - Database Administrator, AI – Data Quality Analyst, AI – DevOps Engineer **Professional:** AI Engineer-> Machine Learning Engineer -> Business Intelligence Developer -> AI Research Scientists

16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	
17.	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	☐ **Yes** ☒ **No**
18.	**Is the Job Role Amenable to Persons with Disability**	☐ **Yes** ☒ **No**
19.	**How Participation of Women will be Encouraged**	Participation of Women Candidates will be ensured as per Existing government norms. Exclusive batches for women would be run for the proposed course. Funding of women batches from IT for masses scheme /other schemes launched by government from time to time.
20.	**Are Greening/ Environment Sustainability Aspects Covered** *(Specify the NOS/Module which covers it)*	☐ **Yes** ☒ **No**
21.	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools** ☒ **Yes** ☐ **No** **Colleges** ☐ **Yes** ☒ **No**
22.	**Name and Contact Details of Submitting / Awarding Body SPOC** *(In case of CS or MS, provide details of both Lead AB & Supporting ABs)*	**Name: Dr Sarwan Singh** **Email: sarwan@nielit.gov.in** **Contact No.: 9815621657** **Website: nielit.gov.in**

23.	**Final Approval Date by NSQC: 29.03.2023**	**24. Validity Duration: 3 years** **25. Next Review Date: 29.03.2026**

Section 2: Module Summary

NOS/s of Qualifications
1. Programming with Python
2. Conceptualizing Data Science with python
3. Data analysis and Visualization
4. Fundamentals of Machine Learning

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer to the curriculum document.

Th.-Theory **Pr.**-*Practical OJT-On the Job* **Man.**-*Mandatory Training Rec.-Recommended Proj.-Project*

S. No	NOS/Module Name	NOS/Module Code & Version (if applicable)	Core/ Non-Core	NCrF/ NSQF Level	Credits as per NCrF	Training Duration (Hours)			Assessment Marks			
						Th.	Pr.	Total	Th.	Pr.	Total	Weightage (%) (if applicable)
1.	NOS 1: Programming with Python	NIE/ITS/N1001	Core	3	2	20	40	60	50	22.5	72.5	20.71
2.	NOS 2: Conceptualizing Data Science with Python	NIE/ITS/N1002	Core	3	2	24	36	60	50	22.5	72.5	20.71
3.	NOS 3: Data analysis and Visualization	NIE/ITS/N1003	Core	3	3	34	56	90	75	33.75	108.75	31.07
4.	NOS 4: Fundamentals of Machine Learning	NIE/ITS/N1004	Core	3	1	12	18	30	25	11.25	36.25	10.35
				Sub-total		90	150	240	200	90	290	82.84
5.	NOS 5: Employability Skills	DGT/VSQ/N0101	Core	3	1	-	-	30	-	-	30	8.57
6.	NOS 6: OJT/Project	N/A	Core	3	1	-	-	30	-	-	30	8.57
	Duration (in Hours) /Total Marks				10	90	150	300	200	90	350	100

Assessment - Minimum Qualifying Percentage
*Please specify **any one** of the following:*

Minimum Pass Percentage – Aggregate at qualification level: 50 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Assessment Components	NOS Included	Duration* (in mins)	Marks
Theory 1: Artificial Intelligence (AI) Assistant Paper-1	NOS 1, NOS 2	90	100
Theory 2: Artificial Intelligence (AI) Assistant Paper-2	NOS 3, NOS 4	90	100
Practical Paper-1	NOS 1, NOS 2, NOS 3, NOS4	180	90
Employability Skills	NOS 5	-	30
Project/OJT	NOS 6	-	30
		Grand Total	**350**

*Assessment strategy shall be as per NIELIT Norms prevailing at times.

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	O-Level (IT) / BCA / B.Sc(IT/CS) / Diploma in CS/IT/ allied area with 1 year of Experience in training or higher.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B-LEVEL / MCA/ B.Tech in CS/IT/EC/EE/ allied areas with an experience of 2 years in training
3.	**Tools and Equipment Required for Training**	☒Yes ☐No *(If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	NA

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	B-LEVEL / MCA/ B.Tech in CS/IT/EC/EE/ allied areas with an experience of 2 years in training
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	The assessor carries out theory online assessments through the remote proctoring methodology. Theory examination would be conducted online and the paper comprise of MCQ. Conduct of assessment is through trained proctors. Once the test begins, remote proctors have full access to the candidate's video feeds and computer screens. Proctors authenticate the candidate based on registration details, pre-test image captured and I- card in possession of the candidate. Proctors can chat with candidates or give warnings to candidates. Proctors can also take screenshots, terminate a specific user's test session, or re-authenticate candidates based on video feeds.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	An External Examiner/ Observer (Subject matter expert) are deployed including NIELIT scientific officers who are subject expert for evaluation of Practical examination/ internal assessment / Project/ Presentation/ assignment and Major Project (if applicable). Qualification is generally B.Tech.
4.	**Assessment Mode** *(Specify the assessment mode)*	Online for Theory Online/Offline/Blended for Practical
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☒ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):**	Yes Available in Annexure-B : Evidence of Need
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):**	Yes Available in Annexure-B : Evidence of Need
3.	**Government /Industry initiatives/ requirement (Yes/No):**	Yes Available in Annexure-B : Evidence of Need
4.	**Number of Industry validation provided:** 12	
5.	**Estimated nos. of persons to be trained and employed:** 1000 candidates will be trained in a year.	
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** NIELIT is recognized as AB and AA under Government Category. NIELIT is an HRD arm of MeitY, therefore, the Line Ministry Concurrence is not required.	

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	Available at Annexure-I: Evidence of Level
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	Available at Annexure-II: Tools and Equipment
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	Available at Annexure-VI: Detailed Assessment Criteria
4.	**Annexure:** Assessment Strategy *(Mandatory)*	Available at Annexure-VII: Detailed Assessment Strategy
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	Available at Annexure-V: Blended Learning
6.	**Annexure:** Multiple Entry-Exit Details *(Mandatory, in case qualification has multiple Entry-Exit)*	NA
7.	**Annexure:** Acronym and Glossary *(Optional)*	Available at Annexure-X: Acronym and Glossary
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Available at Annexure-A: Model Curriculum
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	Available at Annexure-VIII: Career Progression
10.	**Supporting Document:** Occupational Map *(Mandatory)*	Available at Annexure-IX: Occupational Map
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	Available at Annexure-C: Examination SoP
12.	**Any other document you wish to submit:**	NA

Annexure I: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/NSQF Level
Professional Theoretical Knowledge/Process	1. Gain the understanding and learn the power python and its ecosystem 2. Students are able to understand the concept of data analysis and its applications. 3. Students learn the categories of Machine Learning algorithms	1. Possesses specialized operational knowledge and understanding of the work. 2. Have complete knowledge of the concept of time required for delivery; and Quality for a range of issues	3
Professional and Technical Skills/ Expertise/ Professional Knowledge	1. Work in python language for problem solving 2. Perform data analysis after retrieving data from different sources. 3. Apply and evaluate ML algorithms for predictive analysis	1. Possesses specialized professional and technical skills; displays clarity of professional knowledge and technical skills in a broad range of activities/ tasks. 2. Have knowledge of collecting and interpreting the available information, drawing conclusions & communicating the same	3
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	1. Introduction to Employability Skills 2. Career Development & Goal Setting 3. Becoming a Professional in the 21st Century 4. Constitutional values - Citizenship 5. Basic English Skills 6. Communication Skills 7. Essential Digital Skills 8. Financial and Legal Literacy 9. Customer Service 10. Entrepreneurship 11. Diversity & Inclusion 12. Getting Ready for Apprenticeship & Jobs	1. Can explain Entrepreneurial Mindset and describe the importance of it in the context of opportunity curation for future jobs. 2. Can comfortably use most of the basic software with proficiency. 3. Have the ability to relate to the 5 pillars of Social Emotional Skills and describe the similarities between SES and Emotional Intelligence.	3
Broad Learning Outcomes/Core Skill	1. Apply python for data analysis problems using libraries.	1. Students are able to write and design programs on data analysis jobs	3

Responsibility	2. Solving problem using python programming language 3. Performing Data Analytics Task 4. Implementing AI models using ML	1. Takes complete responsibility for delivery and quality of own work and output.	3

Annexure II: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Classroom	1 (30 Sq.m)	30
2	Student Chair	30	30
3	Student Table	30	30
4	Desktop computers with accessories	32 GB RAM with Camera, Headphone and Installed with: Linux/Windows, Wifi/internet connectivity Installed with software: NumPy, Pandas, Matplotlib, Seaborn, Scikit-Learn	30
5	Desk jet printer	1 Nos.	A4

Classroom Aids

The aids required to conduct sessions in the classroom are:

1. LCD Projector

2. Pin-up Board

3. WhiteBoard / markers

Annexure III: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID
1	Jan Samridhi Dumka	Gobind Nath Maji	Secretary	Dudhani Dumka, Near Gyan Mandir School-814101	8789620133	gobind107@gmail.com, jansamridhi09@gmail.com
2	Maa Saraswati Pvt. Industrial Training Institute	Tanwir Hassan Ansari	Principal	Jaynathpur (Near Hanuman Mandir) Lohardaga, Jharkhand-835302	9815107625	masaraswatipvtiti@gmail.com
3	Nice Pvt. ITI	Motilal Ohdar	Director	Moti House, Prince Chowk, Simdega, Jharkhand-835223	7992489955	vtp-nice13@gmail.com
4	Fore Solutions (P) Ltd	Manu Mehta	Director	Fore Solutions (P) Limited SCO 365-366, Sector 35-B Chandigarh – 160022	9216510307	fore@foresolutions.net, manu@foresolutions.net
5	Quantum Solutions India	Apurva Goswamy	Chief Executive	DLF Building, Tower D, 3rd Floor, Chandigarh IT Park, Chandigarh-160101	+91-172-4655151, 52, 54	
6	SysInfoCom	Gaurav	Director	SCO 54-55, Top Floor Sector 34A, Chandigarh	9872019771	info@sysinfocom.com, gaurav.kwatra@sysinfocom.com
7	Smart worker Equipments	Kewal Nanda	Director	Plot 485, Industrial Area, Phase-9 Mohali (Punjab)	8100002200	autosnanda@gmail.com
8	Bunnel Studio Pvt. Ltd	Larinzuala	CEO		8732856261	pslarinzual@gmail.com
9	Digital Orra	Kavita Kundu	Director	19, S.F., Sector 11, Panchkula, Haryana: 134109	9896384224	
10	Farmdeli International LLP	Anil Kumar	Co-Founder & Managing Partner	G.F, Santram Marg, Khasra no. 21/2, Bhatti Village Near Aftlatoon Market, South Delhi, Delhi-110074	99100929244	farmdeliinternational@gmail.com
11	United Computer	Subhasis	Chief Executive	Chotonilpur (Pirtala), P.O.	9641820965	united-computer97@rediffmail.com

				Choudhury		Sripally, Burdwan-713103		
12	Skyworth Consulting	Tegh		Director		Pioneer Tower F140, First Floor, Phase 8B, Mohali Punjab-160055	8360434662	operations@skyworthconsulting.in

Annexure IV: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2023	1000	100	200	100	10	2
2024	1000	100	200	100	10	2
2025	1000	100	200	100	10	2

Data to be provided year-wise for next 3 years

Annexure V: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	Theory/ Lectures - Imparting theoretical and conceptual knowledge	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	60:40
2	Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	60:40
3	Showing Practical Demonstrations to the learners	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	60:40
4	Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	NA	100:0
5	Tutorials/ Assignments/ Drill/ Practice	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	50:50
6	Proctored Monitoring/ Assessment/ Evaluation/ Examinations	NIELIT Remote Proctored Software	Online: 100% Theory Offline: 100% Practical
7	On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Simulated Platform	Either 100% online on virtual environment Or 100% offline in the Industry.

Annexure VI: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory Marks	Practical Marks
NOS1: Programming with Python	1. Installing and configuring programming environment for python 2. Writing basic programs and understanding data types, operators, looping constructs, functions 3. Exploring various data structures 4. Learn to work on modules and packages	50	22.5
NOS 2: Conceptualizing Data Science with python	1. Concept of Data Science and tools used 2. Pre- Processing Concepts in Data Science 3. Introduction to Numpy and Working on N-d arrays 4. Learning Analysis on Numpy 5. Exploring Image handling using Numpy	50	22.5
NOS 3 :Data analysis and Visualization	1. Introduction to Pandas 2. Exploring Data Frames and Series 3. Learning EDA and Data Analysis 4. Performing Analysis on datasets 5. Introduction to Visualization and Learning Tools for making Graphs and plots 6. Exploring analysis through visualization	75	33.75
NOS 4: Fundamentals of Machine Learning	1. Introduction to Machine Learning 2. Learning various ML categories 3. Learning to build models on datasets 4. Exploring the outputs of models	25	11.25
Employability Skills		30	
OJT/Project		30	
Grand Total		**350**	

Annexure-VII: Assessment Strategy

Assessment of the qualification evaluates candidates to ascertain that they can integrate knowledge, skills and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria.

The underlying principle of assessment is fairness and transparency. The evidence of the outcomes and assessment criteria. Competence acquired by the candidate can be obtained by conducting Theory (Online), Practical assessment, internal assessment, Project/Presentation/ Assignment, Major Project. The emphasis is on the practical demonstration of skills & knowledge gained by the candidate through the training. Each OUTCOME is assessed & marked separately. A candidate is required to pass all OUTCOMES individually based on the passing criteria.

About Examination Pattern:

1. The question papers for the theory and practical exams are set by the Examination wing (assessor) of NIELIT HQS.

2. The assessor assigns roll number.

3. The assessor carries out theory online assessments through remote proctoring methodology. Theory examination would be conducted online and the paper comprise of MCQ. Conduct of assessment are through trained proctors. Once the test begins, remote proctors have full access to candidate's video feeds and computer screens. Proctors authenticate the candidate based on registration details, pre-test image captured and I- card in possession of the candidate. Proctors can chat with candidates or give warnings to candidates. Proctors can also take screenshots, terminate a specific user's test session, or re-authenticate candidates based on video feeds.

4. An External Examiner/ Observer may be deployed including NIELIT officials for evaluation of Practical examination/ internal assessment / Project/ Presentation/. Major Project (if applicable) would be evaluated preferably by external/ subject expert including NIELIT officials.

5. Pass percentage would be 50% marks in each component.

6. Candidates may apply for re-examination within the validity of registration (only in the assessment component in which the candidate failed).

7. For re-examination prescribed examination fee is required to be paid by the candidate only for the assessment component in which the candidate wants to reappear.

8. There would be no exemption for any paper/module for candidates having similar qualifications or skills.

9. The examination will be conducted in English language only.

Quality assurance activities: A pool of questions is created by a subject matter expert and moderated by other SME. Test rules are set beforehand. Random set of questions which are according to syllabus appears which may differ from candidate to candidate. Confidentiality and impartiality are maintained during all the examination and evaluation processes.

Annexure-VIII: Career Progression:

Academic:

Vertical:

Level 4: Foundation course in Artificial Intelligence Applications, Certified Artificial Intelligence (AI) Associate "Upskilling"
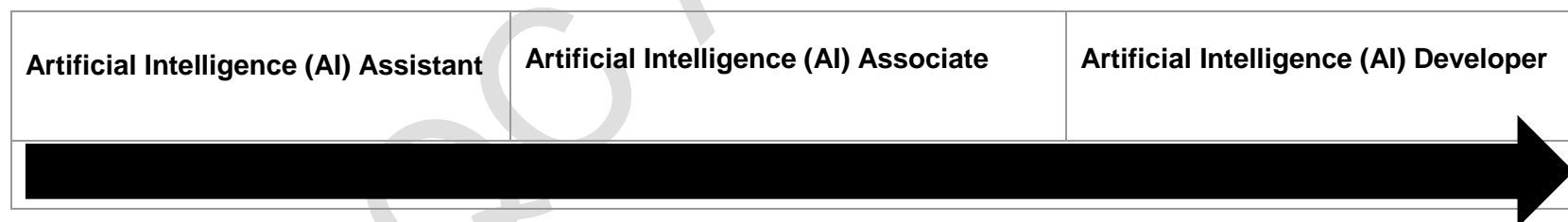
Level 5: Courses in AI: AI -Machine learning Developer, Machine Learning (ML) Engineer ->

 Level 6: Courses in AI: AI - Business Intelligence Analyst, AI - Database Administrator, AI – Data Quality Analyst, AI – DevOps Engineer

Professional:

AI Engineer-> Machine Learning Engineer -> Business Intelligence Developer -> AI Research Scientists

Annexure-IX: Occupational Map

Artificial Intelligence (AI) Assistant	Artificial Intelligence (AI) Associate	Artificial Intelligence (AI) Developer

Annexure X: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf