QUALIFICATION FILE – Micro Credentials

Basics of Artificial Intelligence & Data Science

☒ Public ☐ Private

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

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

NCrF/NSQF Level: 3.5

Submitted By:
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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Micro Credential-Qualification Name</td><td colspan="2">Basics of Artificial Intelligence & Data Science</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">IT-ITeS</td></tr>
<tr><td>3.</td><td>National Qualification Register (NQR) Code & Version (Will be issued after NSQC approval.)</td><td>NM-3.5-IT-03802-2025-V1-NIELIT</td><td>4. NCrF/NSQF Level: 3.5</td></tr>
<tr><td>5.</td><td>Brief Description of the Micro Credential</td><td colspan="2">This course provides a foundational understanding of key AI concepts and data science principles. In the theoretical component, students will explore the evolution of artificial intelligence, its key components such as machine learning, deep learning, computer vision, and natural language processing, along with practical applications in various sectors like healthcare and finance.</td></tr>
<tr><td>6.</td><td>Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:
<table>
<tr><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>**10th with pursuing continuous schooling</td><td>No Experience required</td></tr>
<tr><td>**8th with 2 years of NTC in the field of IT Sector</td><td>No Experience required</td></tr>
<tr><td>** 8th</td><td>3 Year relevant experience in IT</td></tr>
<tr><td>Previous NSQF Level 3 Required</td><td>1.5-year relevant experience in IT</td></tr>
</table>
** Should have a basic understanding of coding.</td></tr>
<tr><td>7.</td><td>Credits Assigned to this Micro credential-Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>0.5 Credits</td><td>8. Common Cost Norm Category (I/II/III) (wherever applicable): Category-II</td></tr>
<tr><td>9.</td><td>Any Licensing Requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</td></tr>
<tr><td>10</td><td>Expected Outcomes of the Micro Credential</td><td colspan="2">Terminal learning outcomes are:
Upon completing the "Basics of Artificial Intelligence & Data Science" course, learners will master fundamental AI concepts, including machine learning and NLP, and apply these in various industries using generative tools. They will gain skills in data handling and pre-processing, understand AI ethics, and acquire practical experience with AI tools, preparing them to address real-world</td></tr>
</table>

<table>
<tr><td></td><td></td><td colspan="2">challenges effectively.</td></tr>
<tr><td>11.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td colspan="2">☒Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (Offline)</td><td>5</td><td>10</td><td>15</td></tr>
</table></td></tr>
<tr><td>12.</td><td>Assessment Criteria</td><td colspan="2">
<table>
<tr><th>Theory (Marks)</th><th>Practical (Marks)</th><th>Project (Marks)</th><th>Viva (Marks)</th><th>Total (Marks)</th><th>Passing %age</th></tr>
<tr><td>25</td><td>25</td><td>00</td><td>00</td><td>50</td><td>50%</td></tr>
</table>
The centralized online assessment is conducted by the Examination Wing, NIELIT Headquarters.
* Assessment strategy shall be as per NIELIT Norms prevailing at times.</td></tr>
<tr><td>13.</td><td>Is the Qualification Amenable to Persons with Disability</td><td colspan="2">☒ Yes ☐ No
a. Locomotor Disability: Leprosy Cured Person, Dwarfism, Muscular Dystrophy and Acid Attack Victims
b. Visual Impairment: Low Vision</td></tr>
<tr><td>14.</td><td>How participation of women will be encouraged?</td><td colspan="2">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. Funding is available for women participation under other schemes launched by Government from time to time.</td></tr>
<tr><td>15.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2">Qualification File will be made available in English & Hindi</td></tr>
<tr><td>16.</td><td>Is similar Micro Credential available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No URLs of similar Qualifications:</td></tr>
<tr><td>17.</td><td>Name and Contact Details Submitting / Awarding Body SPOC
(In case of CS or MS, provide details of both Lead AB & Supporting ABs)</td><td colspan="2">Name: Dr. Vimala Mathew, Scientist E
Email: vimala@nielit.gov.in
Contact No.: 0495-228 7266
Website: https://nielit.gov.in/calicut/index.php</td></tr>
<tr><td>18.</td><td>Final Approval Date by NSQC: 18.02.2025</td><td>19. Validity Duration: 3 Years</td><td>20. Next Review Date: 18.02.2028</td></tr>
</table>

Section 2: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 1 year of Experience in training.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 2 year of Experience in training.
3.	**Tools and Equipment Required for the Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure-II)*

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 2 year of Experience in training.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines), (wherever applicable)*	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)*	External Examiners/ Observers (Subject matter experts) are deployed including NIELIT scientific officers who are subject experts 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 other assessment components depending on the region where the assessment is conducted
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☒ Yes ☐ No (D*etails to be provided in Annexure-II)*

Section 4: Evidence of the Need for the Micro Credential

Provide Annexure/Supporting documents name.

1.	Government /Industry initiatives/ requirement (Yes/No): Yes
2.	Number of Industry validation provided: The Micro credentials are offered through IndiaAi Labs for Empowering the youth by imparting training in Emerging AI Technologies under India AI Future Skills pillar of IndiaAI Mission.
3.	Estimated number of people to be trained: 500

Section 5: 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)*	Annexure I: Evidence of Level
2.	**Annexure:** Learning Outcomes and Assessment Criteria *(Mandatory)*	Annexure II: Assessment Criteria
3.	**Annexure:** Assessment Strategy *(Mandatory)*	Annexure III: Assessment Strategy
4.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory – Except in case of online course)*	Annexure IV: Tools & Equipment
5.	**Annexure:** Blended Learning *(Mandatory in case selected mode of delivery is "Blended Learning")*	Annexure V: Blended Learning
6.	**Annexure:** Acronym and Glossary *(Optional)*	Annexure VI: Acronym & Glossary

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	Understanding of foundational concepts in artificial intelligence and data science.	Ability to apply theoretical knowledge to practical situations, such as implementing data preprocessing techniques and analyzing large datasets.	3.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	Demonstrate expertise in utilizing various AI tools and implementing data analysis techniques, including data preprocessing, statistical analysis, and machine learning algorithms.	Mastery of data preprocessing techniques, such as cleaning, normalization, and handling missing data, equips students with the technical expertise required for data analysis roles.	3.5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Demonstrate the ability to effectively utilize popular AI tools and implement data preprocessing techniques on real-world datasets.	By gaining hands-on experience with AI tools and data preprocessing techniques, students develop the technical skills necessary for employment in data-driven roles.	3.5
Broad Learning Outcomes/Core Skill	Ability to critically analyze complex datasets and AI applications, applying appropriate data preprocessing techniques and statistical methods to derive meaningful insights	Exposure to various AI tools and data science methodologies encourages students to be adaptable, allowing them to navigate different technologies and approaches as they evolve in their careers.	3.5
Responsibility	Demonstrate a strong commitment to ethical practices and data integrity in their work with AI and data science applications.	Equipped with the knowledge to identify and articulate ethical concerns related to AI, such as bias and privacy issues.	3.5

Annexure-II: Assessment Criteria

Detailed PC-wise assessment criteria and assessment marks for the NOS are as follows:

Assessment Criteria for Performance Criteria	Learning Outcome	Theory Marks	Practical Marks	Project Marks	Viva Marks
Basic concepts and evolution of artificial intelligence	● Evaluated on their ability to articulate the historical evolution of artificial intelligence ● Demonstrate their understanding of AI components by creating a visual infographic that outlines the relationships and differences between machine learning, deep learning, computer vision, and natural language processing.	25	25	0	0
Large and complex datasets	● Complete a practical assignment where they preprocess a provided large dataset, applying techniques such as data cleaning, normalization, and handling missing values. ● hands-on project where they are required to analyze a complex dataset				
Ethical concerns related to AI	● Discussing specific ethical concerns related to AI applications ● Engage in a group discussion or debate on ethical dilemmas in AI, demonstrating their ability to articulate different viewpoints				
		25	**25**	**0**	**0**
	Total Marks	**50**			

Annexure-III: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required Competencies of the program.

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) examination.

About Examination Pattern:

1. The question papers for the theory 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. Theory examination would be conducted online and the paper comprise of MCQ
4. Pass percentage would be 50% marks.
5. 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-IV: 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	30 Sq.m	30
2	Student Chair	-	30
3	Student Table	-	30
4	Desktop computer with accessories	Installed with: IDEs like PyCharm, Jupyter, AI libraries (TensorFlow, Scikit-learn)	30
5	LCD Projector	-	1
6	Deskjet printer	A4	1

Classroom Aids:
The aids required to conduct sessions in the classroom are:

1. LCD Projector/Smart Board
2. Pin-up Board
3. WhiteBoard, Markers, Chart paper and sketch pens

Annexure-V: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

S. No.	Select the Components of the NOS	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	NA	NA
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	Online interaction platforms like JitSi Meet, Bharat VC, Google Meet, MS Teams, etc.	60:40
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/ Candidate Training	NA	NA

Annexure-VI: Acronym & Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework

Glossary

Term	Description
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.