

QUALIFICATION FILE–Standalone NOS

Essentials of Data Warehousing

☐ Horizontal/Generic ☐ Vertical/Specialization

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

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

NCrF/NSQF Level: 5

Submitted By:

National Institute of Electronics and Information Technology (NIELIT)

NIELIT Bhawan,
Plot No. 3, PSP Pocket, Sector-8,
Dwarka, New Delhi-110077,
Phone: - 91-11-25308300
e-mail: - contact@nielit.gov.in

Table of Contents

Section 1: Basic Details	3
Section 2: Training Related	6
Section 3: Assessment Related	7
Section 4: Evidence of the Need for the Standalone NOS	7
Section 5: Annexure & Supporting Documents Check List	8
Annexure-I: Evidence of Level	9
Annexure II: Tools and Equipment (lab set-up)	10
Annexure III: Industry Validations/ Government Recognition Summary	11
Annexure IV : Training Details	12
Annexure V: Blended Learning	12
Annexure VI : Standalone NOS- Performance Criteria details	13
Annexure VII: Assessment Criteria	15
Annexure VIII: Assessment Strategy	15
Annexure IX : Acronym and Glossary	16

Section 1: Basic Details

1.	NOS-Qualification Name	Essentials of Data Warehousing	
2.	Sector/s	IT-ITeS	
3.	Type of Qualification <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised	NQR Code & version of the existing /previous qualification: NA	Qualification Name of the existing/previous version: NA
4.	National Qualification Register (NQR) Code & Version	NG-05-IT-01426-2023-V1-NIELIT and Version 1	5. NCrF/NSQF Level: 5
6.	Brief Description of the Standalone NOS	<p>The "Essentials of Data Warehousing" upskilling course provides participants with a foundational understanding of key concepts and practices integral to effective data warehousing. Through this course, individuals delve into data modeling techniques, gaining insights into structuring data for optimal storage and retrieval. Furthermore, participants explore the ETL processes, learning how to extract, transform, and load data into a warehouse efficiently. With a focus on dimensional modeling, this course equips learners with the skills needed to design and implement data warehouses, facilitating the organization and optimization of large datasets for streamlined analytics. This essential upskilling opportunity is particularly beneficial for data professionals and business analysts seeking to enhance their expertise in managing and leveraging data for strategic decision-making.</p> <p>Throughout the course, participants engage in practical applications and case studies, allowing them to apply the theoretical knowledge gained to real-world scenarios. By the end of the program, learners emerge with a solid understanding of data warehousing essentials, positioning them to contribute effectively to data-driven initiatives within their organizations and navigate the complexities of modern data management</p>	

7. Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience: <table border="1"> <thead> <tr> <th data-bbox="1025 240 1131 379">S. No.</th><th data-bbox="1131 240 1780 379">Academic/Skill Qualification (with Specialization - if applicable)</th><th data-bbox="1780 240 2029 379">Relevant Experience (with Specialization - if applicable)</th></tr> </thead> <tbody> <tr> <td data-bbox="1025 379 1131 1086">1</td><td data-bbox="1131 379 1780 1086"> Pursuing^ Final Year B.Tech in any branch of Engineering* Or Pursuing^ Final Year MCA Or Pursuing^ Final Year B.Sc. in any branch of Sciences* Or Pursuing^ Final Year B.Sc. in IT/CS/Electronics/allied subjects *Students should have relevant knowledge of data analysis and programming concepts. #Students with the above entry requirements are eligible to take the course subject to clearing the written test comprising of Analytical Reasoning, Mathematics and English ^Passout students in the above entry requirements are also eligible for the course. </td><td data-bbox="1780 379 2029 1086">NA</td></tr> </tbody> </table> b. Age: No bar		S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Relevant Experience (with Specialization - if applicable)	1	Pursuing^ Final Year B.Tech in any branch of Engineering* Or Pursuing^ Final Year MCA Or Pursuing^ Final Year B.Sc. in any branch of Sciences* Or Pursuing^ Final Year B.Sc. in IT/CS/Electronics/allied subjects *Students should have relevant knowledge of data analysis and programming concepts. #Students with the above entry requirements are eligible to take the course subject to clearing the written test comprising of Analytical Reasoning, Mathematics and English ^Passout students in the above entry requirements are also eligible for the course.	NA
S. No.	Academic/Skill Qualification (with Specialization - if applicable)	Relevant Experience (with Specialization - if applicable)						
1	Pursuing^ Final Year B.Tech in any branch of Engineering* Or Pursuing^ Final Year MCA Or Pursuing^ Final Year B.Sc. in any branch of Sciences* Or Pursuing^ Final Year B.Sc. in IT/CS/Electronics/allied subjects *Students should have relevant knowledge of data analysis and programming concepts. #Students with the above entry requirements are eligible to take the course subject to clearing the written test comprising of Analytical Reasoning, Mathematics and English ^Passout students in the above entry requirements are also eligible for the course.	NA						
8. Credits Assigned to this NOS-Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	3	9. Common Cost Norm Category (I/II/III) (wherever applicable): Category-II						
10. Any Licensing Requirements for Undertaking Training on This Qualification (wherever applicable)	Not Applicable							

11.	Training Duration by Modes of Training Delivery <i>(Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</i>	<div><input checked="" type="checkbox"/> Offline <input type="checkbox"/> Online <input type="checkbox"/> Blended</div> <table><tr><th>Training Delivery Mode</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>Total (Hours)</th></tr><tr><td>Classroom (offline)</td><td>40</td><td>50</td><td>90</td></tr></table> <p>The mode of delivery shall be based on the regional demand and can be offered in any of the above modes mentioned.</p>						Training Delivery Mode	Theory (Hours)	Practical (Hours)	Total (Hours)	Classroom (offline)	40	50	90				
Training Delivery Mode	Theory (Hours)	Practical (Hours)	Total (Hours)																
Classroom (offline)	40	50	90																
12.	Assessment Criteria	<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>100</td><td>0</td><td>0</td><td>0</td><td>100</td><td>50</td></tr></table> <p>The centralised online assessment is conducted by the Examination Wing, NIELIT Headquarters.</p>						Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Passing %age	100	0	0	0	100	50
Theory (Marks)	Practical (Marks)	Project (Marks)	Viva (Marks)	Total (Marks)	Passing %age														
100	0	0	0	100	50														
13.	Is the NOS Amenable to Persons with Disability	<div><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</div> <p>If “Yes”, specify applicable type of Disability:</p> <div><div>a.</div>Locomotor Disability: Leprosy Cured Person, Dwarfism, Muscular Dystrophy and Acid Attack Victims</div> <div><div>b.</div>Visual Impairment: Low Vision</div>																	
14.	Progression Path After Attaining the Qualification, wherever applicable	Data Warehouse Analyst Business Intelligence Analyst Data Quality Analyst Data Analyst Data Architect																	
15.	How will the participation of women be encouraged?	Participation by women can be ensured through Government Schemes. Occasionally, exclusive batches for women would be run for the proposed courses. Funding is available for women’s participation under other schemes launched by the Government from time to time.																	

16.	Other Indian languages in which the Qualification & Model Curriculum are being submitted	Only English	
17.	Is similar NOS available on NQR-if yes, justification for this qualification	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
18.	Name and Contact Details Submitting / Awarding Body SPOC (In the case of CS or MS, provide details of both Lead AB & Supporting ABs)	<p>A. Name: SHRI NILADRI DAS Position in the organization: Scientist E Address: NIELIT Agartala Tel number(s): 8794028299 E-mail address: niladridas@nielit.gov.in</p> <p>B. Name: SHRI BINOY DAS Position in the organization: Senior Technical Officer Address: NIELIT Agartala Tel number(s): 8794822459 E-mail address: erbinoy@nielit.gov.in</p>	
19.	Final Approval Date by NSQC: 30/11/2023	20. Validity Duration: 3 years	21. Next Review Date: 30/11/2026

Section 2: Training Related

1.	Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	B.Tech or Equivalent as per NCrf with 15+ years of experience
2.	Master Trainer's Qualification and experience in the relevant sector (in years) (as per NCVET guidelines)	B.Tech or Equivalent as per NCrf with 15+ years of experience
3.	Tools and Equipment Required for the Training	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Available at Annexure-II
4.	In Case of Revised NOS, details of Any Upskilling Required for Trainer	Not Applicable

Section 3: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	B.Tech or Equivalent as per NCrf with 15+ years of experience
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 comprises 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)	Centralized online examination will be conducted
5.	Tools and Equipment Required for Assessment	Same as for training <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Section 4: Evidence of the Need for the Standalone NOS

1.	Government /Industry initiatives/ requirement (Yes/No): Yes.
2.	Number of Industry validation provided: 4
3.	Estimated number of people to be trained: 1000 persons per year shall be trained.
4.	Evidence of Concurrence/Consultation with Line/State Departments (In case of regulated sectors): No NIELIT is recognised as AB and AA under the Government Category. NIELIT is the HRD arm of MeitY, Gol.

Section 5: Annexure & Supporting Documents Check List*Specify Annexure Name / Supporting document file name*

1.	Annexure: NCrf/NSQF level justification based on NCrf/NSQF descriptors <i>(Mandatory)</i>	<i>Available at Annexure-I: Evidence of Level</i>
2.	Annexure: List of tools and equipment relevant for NOS <i>(Mandatory, except in case of online course)</i>	<i>Available at Annexure-II: Tools and Equipment</i>
3.	Annexure: Industry Validation	<i>Available at Annexure-III: Industry Validation</i>
4.	Annexure: Training Details	<i>Available at Annexure-IV: Training Details</i>
5.	Annexure: Blended Learning <i>(Mandatory, in case the selected Mode of delivery is Blended Learning)</i>	<i>Available at Annexure-V: Blended Learning</i>
6.	Annexure/Supporting Document: Standalone NOS- Performance Criteria Details Annexure/Document with PC-wise detailing as per NOS format (Mandatory- Public view)	<i>Available at Annexure-VI: Performance Criteria</i>
7.	Annexure: Performance and Assessment Criteria <i>(Mandatory)</i>	<i>Available at Annexure-VII: Detailed Assessment Criteria</i>
8.	Annexure: Assessment Strategy <i>(Mandatory)</i>	<i>Available at Annexure-VIII: Assessment Strategy</i>
9.	Annexure: Acronym and Glossary <i>(Optional)</i>	<i>Available at Annexure-IX: Acronym and Glossary</i>
10.	Supporting Document: Model Curriculum	<i>Available at Annexure-A: Model Curriculum</i>

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	This course for professionals requires foundational theoretical knowledge encompassing key principles of data warehousing. Participants should develop a deep understanding of data modelling, ETL processes, and dimensional modeling, essential components in structuring, transforming, and optimizing data for efficient storage and retrieval. A comprehensive grasp of these theoretical concepts is crucial for professionals aiming to design and implement effective data warehouses, enabling strategic decision-making and enhancing their capabilities in managing large datasets for analytical purposes.	This course is aligned with higher NSQF/NCrF levels, indicating a need for advanced theoretical knowledge and practical application in the specialized field of data warehousing.	5
Professional and Technical Skills/ Expertise/ Professional Knowledge	Collectively enable professionals in this role to navigate the complexities of data warehousing, contribute meaningfully to organizational objectives, and ensure the effective management and utilization of large datasets for analytical purposes.	Individuals completing this qualification are likely to possess the expertise required for roles demanding advanced and specialized knowledge in the field of Data Warehousing.	5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Professional skills collectively enable individuals to contribute effectively to organizations leveraging Data Warehousing technologies, adapt to changing industry demands, and excel in roles such as Data Warehouse Analyst, Business Intelligence Analyst, Data Quality Analyst, Data Analyst, Data Architect or other specialized positions within the cloud computing domain.	Candidates will be learning effective communications which will make them smart in communicating with various companies and people.	5
Broad Outcomes/Core Skill Learning	Imparts participants with a comprehensive understanding of key concepts such as data modeling, ETL processes, and dimensional modeling. Through hands-on learning, individuals develop proficiency in designing and implementing data warehouses, fostering the analytical skills necessary for deriving meaningful insights. The course's broad learning outcomes encompass problem-solving, project management, and	Candidate can perform well under supervision of team lead	5

	effective communication, empowering participants to strategically contribute to data-driven initiatives within their organizations.		
Responsibility	Entrusted with the responsibility of designing and implementing data warehouses, ensuring optimal data models, ETL processes, and dimensional modeling. Their role encompasses maintaining data accuracy, troubleshooting issues, managing projects, and effectively communicating analytical insights, contributing significantly to strategic decision-making within the organization.	Takes complete responsibility for delivery and quality of own work and output as also the subordinates. Shares responsibility for the group tasks.	5

Annexure II: Tools and Equipment (lab set-up)

List of Tools and Equipment
Batch Size: 30

S. No	Tool/Equipment	Specification	Quantity for specified Batch size
1	Classroom	1 (30 Sq.m)	30
2	Students Chair	30	30
3	Students Table	30	30
4	Desktop computer with accessories	GUI based Operating System, Data Warehousing Platforms, Apache NiFi, Talend, Microsoft SQL Server Integration Services (SSIS), Data Modeling Tools, PyCharm, Jupyter Notebooks	30
5	Deskjet printer	1 No.	Paper-A4

Classroom Aids for offline and blended mode of training:

The aids required to conduct sessions in the classroom are:

1. LCD Projector/Smart Board
2. Pin-up Board
3. WhiteBoard, Markers

Annexure III: Industry Validations/ Government Recognition Summary

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID
1	Software World	Amrita Saha	Proprietor	Ujan Abhoynagar, Manipuripara, Agartala, Tripura(West)	7005261744	support@softwareworld.co.in
2	Bada Biplab Power Solution LLP	Iduli Debbarma	Designated Partner	Agartala West Tripura, Pin: 799003	9436740983	bbpsllp@gmail.com
3	Krishna Industrial Services	Debajit Dey	Proprietor	Badharghat Chowmuhani Agartala, Pin: 799003	9862770077	jbyacademy@gmail.com
4	JB Youth Computer Solution & Educational Society	Nishi Kanta Das	Project Coordinator	Badharghat Chowmuhani, Siddi Ashram, Agartala	9436740983	jbyacademy@gmail.com

Annexure IV: Training Details**Training Projections:**

Year	Estimated Training # of Total Candidates	Estimated training# of Women	Estimated training# of People with Disability
2023-24	1000	200	20
2024-25	1000	200	20
2025-26	1000	200	20

Data to be provided year-wise for next 3 years.

Annexure V: Blended Learning**Blended Learning Estimated Ratio & Recommended Tools:**

Refer NCVET “Guidelines for Blended Learning for Vocational Education, Training & Skilling” available on:

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	PCs/Laptops	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 Online Examination	Online: 100% Theory
7	On the Job Training (OJT)/ Project Work Internship/ Candidate Training	NA	NA

Annexure VI : Standalone NOS- Performance Criteria details**1. Description:**

Participants will demonstrate proficiency in designing and implementing data warehouses, encompassing data modeling, ETL processes, and dimensional modeling. Additionally, they will acquire a deep understanding of the strategic role of data warehousing in facilitating efficient analytics and informed decision-making within organizational contexts.

2. Scope:

The scope covers the following:

- Expand career opportunities such as Data Analyst, Database Developer, and Business Intelligence Analyst, where professionals design, implement, and optimize data warehouses for effective decision-making.
- Can contribute to industries such as finance, healthcare, and e-commerce, where data warehousing is crucial for extracting valuable insights from vast datasets.
- Equips individuals for opportunities in consulting firms, technology companies, and enterprises aiming to leverage data strategically, fostering a wide range of career prospects in the data management and analytics domain.

3. Elements and Performance Criteria

Elements	Performance Criteria
Data warehouse Concepts	PC1: Effectively collect, integrate, and analyze data from multiple sources to provide insights for decision making. PC2: Adhere to data integrity, consistency, and security principles to ensure reliable and trustworthy data for analysis.
Data Warehouse and Integrations	PC1: Data warehouses and data marts should provide efficient data storage, retrieval, and analysis capabilities to support informed decision-making. PC2: Data marts offer focused data access for specific business units or functional areas, while data warehouses provide a comprehensive view of the organization's data for enterprise-wide analysis.

Data Lake	PC1: Designed to store large volumes of raw data in its native format, making it easier to analyze and process diverse data sources. PC2: Designed for structured data analysis and reporting, providing a cleansed and organized repository for business intelligence and decision making.
-----------	--

4. Knowledge and Understanding (KU):

The individual on the job needs to know and understand:

- KU1. Understanding of data warehousing principles, focusing on the organization and structuring of data for efficient storage.
- KU2. Gain proficiency in Extract, Transform, Load (ETL) processes, learning to systematically move and transform data within a data warehouse.
- KU3. Covers dimensional modeling techniques, enabling learners to design effective schemas for analytical insights and reporting.
- KU4. Emphasis is placed on data warehousing best practices, providing participants with guidelines for the successful design and implementation of data warehousing solutions.
- KU5. Highlights the strategic significance of data warehousing in organizational decision-making, emphasizing the crucial role of structured and optimized data for informed business strategies.

5. Generic Skills (GS):

User/individual on the job needs to know how to:

- GS1. Follow instructions, guidelines and procedures
- GS2. Listen effectively and communicate information accurately
- GS3. Apply formatting features to achieve the desired results

Annexure VII: Assessment Criteria

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

S. No.	Assessment Criteria for Performance Criteria	Theory Marks	Practical Marks	Project Marks	Viva Marks
Data warehouse Concepts	PC1: Effectively collect, integrate, and analyze data from multiple sources to provide insights for decision making. PC2: Adhere to data integrity, consistency, and security principles to ensure reliable and trustworthy data for analysis.	30	-	-	-
Data Warehouse and Integrations	PC1: Data warehouses and data marts should provide efficient data storage, retrieval, and analysis capabilities to support informed decision-making. PC2: Data marts offer focused data access for specific business units or functional areas, while data warehouses provide a comprehensive view of the organization's data for enterprise-wide analysis.	40	-	-	-
Data Lake	PC1: Designed to store large volumes of raw data in its native format, making it easier to analyze and process diverse data sources. PC2: Designed for structured data analysis and reporting, providing a cleansed and organized repository for business intelligence and decision making.	30	-	-	-
Total Marks		100	-	-	-

Annexure VIII: 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 IX : Acronym and 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
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.