





QUALIFICATION FILE

Associate Data Analyst

⊠ Short Term Training (STT) □ Long Term Training (LTT) □ Apprenticeship

\square Upskilling \square Dual/Flexi Qualification \square For ToT \square For ToA

□General ⊠Multi-skill (MS) □ Cross Sectoral (CS) ⊠Future Skills □ OEM

NCrF/NSQF Level: 5.0

Submitted By:

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Table of Contents

Section 1: Basic Details
Section 2: Module Summary7
NOS/s of Qualifications
Mandatory NOS/s:
Elective NOS/s:
Optional NOS/s:
Assessment - Minimum Qualifying Percentage
Section 3: Training Related
Section 4: Assessment Related
Section 5: Evidence of the need for the Qualification
Section 6: Annexure & Supporting Documents Check List
Annexure-I: Evidence of Level
Annexure - II: Tools and Equipment (Lab Set-Up)
Annexure -III: Assessment Criteria
Annexure - IV: Assessment Strategy
Annexure - V: Blended Learning
Annexure - VI : Acronym and Glossary

Section 1: Basic Details

1.	Qualification Name	Associate Data Analyst							
2.	Sector/s	IT-ITeS							
3.	Type of Qualification: ☑ New □ Revised □ Has Electives/Options □OEM	NQR Code & version of existing/previous qualification: (change to previous, once approved)	Qualification Name of existing/previous version:						
4.	 a. OEM Name b. Qualification Name (Wherever applicable) 	Associate Data Analyst							
5.	National Qualification Register (NQR) Code &Version (Will be issued after NSQC approval)	QG-05-IT-01490-2023-V1-GU	6. NCrF/NSQF Level: 5.0						
7.	Award (Certificate/Diploma/Advance Diploma/ Any Other (Wherever applicable specify multiple entry/exits also & provide details in annexure)	r Certificate							
8.	Brief Description of the Qualification	The Associate Data Analyst Certification (Level 5 ambitious undergraduate engineering students Intelligence (AI) and Machine Learning (ML). This solid foundation in STEM to further elevate their s to extract actionable insights from complex datas Geared toward participants with STEM backgrour of expertise in AI and ML, indicating that students also well-prepared to dive into more intricate app a deep proficiency in various AI and ML metho enabling them to tackle real-world challenges with By strengthening their skills in AI and ML throug the "Make in India" movement by driving inno bolstering India's position as a hub for cutting-ed will emerge as sought-after professionals who engineering practices, contributing significantly to	5.0) is an advanced qualification meticulously designed for who aspire to excel in the dynamic fields of Artificial program is an exceptional opportunity for students with a kills and become adept at harnessing AI and ML techniques sets. ad, Level 5.0 of this certification signifies a heightened level s have not only grasped the fundamental concepts but are polications. Through this certification, students will develop dologies, tools, algorithms, and programming languages, th confidence. the this certification, students can effectively contribute to portion, creating technologically advanced products, and log engineering solutions. At the end of this program, one to can seamlessly integrate AI and ML techniques into to innovation and progress within the IT industry.						
9.	Eligibility Criteria for Entry for Student/Trainee/Learner/Employee	a. Entry Qualification & Relevant Experience:							

		S. No.	Academic/Sk	ill Qualificatio applica	n (with Spec able)	ialization - if	Required Experie Specialization - if	ence (with applicable)		
		1	 Com UG Pursu and c Com 12th) Pursu 12th 12th of NT 	pleted 2nd year continuing edu pleted 2nd y uing 2nd year pass with 2 ye C/NAC/CITS	ear of 3-year/ of 3-year/ ucation rear of dipl of 2-year di ear of any c or equivale	ar/ 4-years 4-years UG oma (after ploma after ombination	No Experience	e required		
		2 • Completed 3-year diploma after 10th 1 ye • 12th Grade pass with 1-year of NTC/NAC • Completed 1st year of 3-year/ 4-years 1 ye UG UG • Completed 1st year of 3-year/ 4-years • Completed 1st year of 3-year/ 4-years						1 year relevant experience		
		3 • 12th Grade pass					2 year relevant	experience		
		4 • 10th Grade pass				4 year relevant experience				
		D. Age:	As per Departr	nent's normal	I I Admissio	n norms				
10.	Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))	min: 23 max: 27 Note: Wit and with	h one elective, two electives, n	minimum cred naximum credi	lits = 23 ts = 27	L1. Common Cos applicable): N	t Norm Category (I/ IA	II /III) (wherever		
12.	Any Licensing requirements for Undertaking Training on This	NA								
12	Qualification (wherever applicable) Training Duration by Modes of Training Delivery (Specify Total									
15.	Duration as per selected training delivery modes and as per requirement of	□Offline Traini	□Online 🖾B	lended	Duration		017	Tatal		
	the qualification)	Irain	Modes	(Hours)	(Hours)	Mandatory (Hours)	Recommended (Hours)	(Hours)*		
		Classroo	om (offline)	130	327	80		537		
		Online		33				33		
		*Total (hou Two Electiv Minimum Maximum	urs): 570 - This ia ves are there in N Total (Hours) - 57 Total (Hours) - 57	total hours inclu IOS: 7, each of 1 '0+120 = 690 (W 70+120+120 = 81	uding Mandato 20 hours 'ith one electiv 10 (With two e	ve), electives)				

		(Refer Blended Learning Annexure for details)
14	Aligned to NCO/ISCO Code/s (if no code is quailable mention the same)	NCO/2015/NII
15	Progression nath after attaining the qualification (Please show	ACADEMIC PROGRESSION
15.	Professional and Academic progression)	After completion of the course he/she can be awarded CERTIFICATE IN Associate Data Analyst (LEVEL 5.0), Further he/she can enroll for vertical progression for UG degree in AI-ML or equivalent (Level 5.5), which can pave the way for PG degree in related programmes. PROFESSIONAL PROGRESSION An Associate Data Analyst can work in Industry for 3 years and with some industry certifications, one can progress to Data Scientist, and further 3 years of experience along with training/certification, one can progress to Data Science Architect.
16.	Other Indian languages in which the Qualification & Model	None
47	Curriculum are being submitted	
17.	Is similar Qualification(s) available on NQR-if yes, justification for this qualification	Yes IN NO URLs of similar Qualifications:
18.	Is the Job Role Amenable to Persons with Disability	🗷 Yes 🗆 No
		If "Yes", specify applicable type of Disability: Persons with physical disabilities excluding visual impairment, lack or loss of both hands/arms
19.	How Participation of Women will be Encouraged	 > Scholarships/Government-funding opportunities > Possibility of Flexible Learning Hours due to Blended mode (offline + online) > Dual domains of work – Design & Manufacturing (post-certification) > Possible Flexible Working Location due to the nature of the qualification
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	Name: Dr. Girish Patel	
	(In case of CS or MS, provide details of both Lead AB & Supporting ABs)	Email: er@guni.ac.in	Contact No.: +91 92282 05961
		Website: https://www.ganpatuniversity.ac.in/	
23.	Final Approval Date by NSQC: 29-09-2023	24. Validity Duration: 3 years	25. Next Review Date: 29-09-2027

Section 2: Module Summary

NOS/s of Qualifications

- NOS 1: Bridge Module: Python for Data Science
- NOS 2: Data Analytics and Statistical Methods
- NOS 3: Machine Learning
- NOS 4: Deep Learning
- NOS 5: MLOps
- NOS 6: Employability Skills
- NOS 7: Natural Language Processing
- NOS 7: Computer Vision
- OJT/project *

Mandatory NOS/s:

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

ThTheory PrPractical OJT-On the Job ManMandatory	Training RecRecommended ProjProject
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S. No	NOS/Module Name	NOS/Modul	Core/	NCrF/NS	Credits	Training Duration (Hours)					Assessment Marks					
		e Code &	Non-	QF Level	as per	Th.	Pr.	OJT-	OJT-	Total	Th.	Pr.	Proj.	Viva	Total	Weightage
		Version (if	Core		NCrF			Man.	Rec.							(%) (if
		applicable)														applicable)
1.	NOS 1: Bridge Module: Python for Data Science	GU/IT/0001	Core	5.0	2	15	35	10		60	15	25			40	11.42
2.	NOS 2: Data Analytics and Statistical Methods	GU/IT/0002	Core	5.0	3	25	55	10		90	15	25			40	11.42
3.	NOS 3: Machine Learning	GU/IT/0003	Core	5.0	4	35	65	20		120	15	25			40	11.42
4.	NOS 4: Deep Learning	GU/IT/0004	Core	5.0	4	35	70	15		120	15	45			60	17.14
5.	NOS 5: MLOps	GU/IT/0005	Core	5.0	4	35	70	15		120	15	45			60	17.14
6.	NOS 6: Employability Skills	DGT/VSQ/N	Non-Core	5.0	2	18	32	10		60	15	35			50	14.28
		0102														
Duration (in Hours) / Total Marks					19	163	327	80		570	90	200			290	

Elective NOS/s:

S. No	NOS/Module Name	NOS/Modul	Core/	NCrF/NS	Credits	Training Duration (Hours)				Assessment Marks						
		e Code &	Non-	QF Level	as per	Th.	Pr.	-TLO	OJT-	Total	Th.	Pr.	Proj.	Viva	Total	Weightage
		Version (if	Core		NCrF			Man.	Rec.							(%) (if
		applicable)														applicable)
1.	NOS 7: Natural Language Processing	GU/IT/0007	Core	5.0	4	40	70	10		120	15	45			60	17.46
2.	NOS 8: Computer Vision	GU/IT/0008	Core	5.0	4	40	70	10		120	15	45				
Duration (in Hours) / Total Marks					4	40	70	10		120	15	45			60	

Optional NOS/s:

S. No	NOS/Module Name	NOS/Modul	Core/	NCrF/NS	Credits	Training Duration (Hours)				Assessment Marks						
		e Code &	Non-	QF Level	as per	Th.	Pr.	OJT-	OJT-	Total	Th.	Pr.	Proj.	Viva	Total	Weightage
		Version (if	Core		NCrF			Man.	Rec.							(%) (if
		applicable)														applicable)
1.																
2.																
Duration	n (in Hours) / Total Marks															

Assessment - Minimum Qualifying Percentage

Please specify **any one** of the following:

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

Minimum Pass Percentage – NOS/Module-wise: <u>50</u>% (Every Trainee should score specified minimum passing percentage in each mandatory and selected elective NOS/Module to successfully clear the assessment.)

1.	Trainer's Qualification and experience in the relevant	Post Graduate in Computer Science /Computer Application / IT from UGC Recognized University or
	sector (in years) (as per NCVET guidelines)	GCVT B Level with two-year experience in the relevant field.
		OR
		Bachelor in Computer Science / Computer Application / IT OR PGDCA from UGC recognized University
		or GCVT A Level with three years' experience in the relevant field.
		OR
		03 years Diploma in Computer Science / IT from recognized Board/Institute or relevant Advanced
		Diploma (Vocational) (ADIT) from DGT with three year experience in the relevant field.
		OR
		NTC/NAC in COPA or any trade in ITES sector trade with three year experience in the relevant field.
		Essential Qualification:
		Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.
2.	Master Trainer's Qualification and experience in the	B-LEVEL / MCA/ B.Tech in CS/IT/EC/EE/ allied areas with an experience of 5 years in training
	relevant sector (in years) (as per NCVET guidelines)	
3.	Tools and Equipment Required for Training	⊠res □No (If "Yes", details to be provided in Annexure)
		Refer Annexure II
4.	In Case of Revised Qualification, Details of Any	NA
	Upskilling Required for Trainer	

Section 3: Training Related

Section 4: Assessment Related

1.	Assessor's Qualification and experience in relevant sector (in years) (as per NCVET	Assessment shall be carried out by NCVET-recognized AAs with B.Tech/M.Tech/MCA/MSC IT/ relevant field with industry experience.
	guidelines)	The assessor carries out Practical offline assessments in Practical Lab/Workshop of Institute. Theory examination would be conducted online and the paper comprises MCQ/subjective questions. 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.
2.	Proctor's Qualification and experience in relevant sector (in years) (as per NCVET guidelines)	Qualification is generally B.Tech.

		For Associate Data Analyst: Graduate with a minimum of 1 year of experience in the field of data science,
		AI, ML, DL and NLP
3.	Lead Assessor's/Proctor's Qualification and	Relevant skill-certified assessor with knowledge of syllabus design to implementation, SME preferable.
	experience in relevant sector (in years) (as per	
	NCVET guidelines)	
4.	Assessment Mode (Specify the assessment mode)	Blended mode
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, Annexure E: Evidence of Skill Gap
2.	Latest Market Research Reports or any other source (not older than 2 years) (Yes/No): Yes
	 "Why Data Science is the most in-demand skill now and how can you prepare for it?", 2023
	https://www.worlddatascience.org/blogs/why-data-science-is-the-most-indemand-skill-now-and-how-can-you-prepare-for-it
	• "The state of AI in 2022—and a half decade in review", December 06, 2022
	https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2022-and-a-half-decade-in-review
3.	Government /Industry initiatives/ requirement (Yes/No): Yes, Available at Annexure E: Evidence of Skill Gap
4.	Number of Industry validation provided: 7
5.	Estimated nos. of persons to be trained and employed: 90 persons per year shall be trained
6.	Evidence of Concurrence/Consultation with Line Ministry/State Departments:
	Ganpat University has received provisional approval as AB and AA from NCVET. The evidence of levels of skilling as well as the skill gaps in the relevant industry/domain have been provided as annexures to this document.

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-III: Assessment Criteria
4.	Annexure: Assessment Strategy (Mandatory)	
		Available at Annexure-IV: Assessment Strategy
5.	Annexure: Blended Learning (Mandatory, in case selected Mode of delivery	
	is "Blended Learning")	Available at Annexure-V: Blended Learning
6		
6.	Annexure: Multiple Entry-Exit Details (Mandatory, in case qualification has multiple Entry Exit)	
7	Appayure: Acropym and Glossary (Ontional)	
/.		Available at Annexure-VI: Acronym and Glossary
8	Supporting Document: Model Curriculum (Mandatory – Public view)	
0.	Supporting Document. Model currentin (Mundulory – Public New)	Available at Annexure-A: Syllabus
9	Supporting Document: Career Progression (Mandatory - Public view)	
5.	Supporting Document. cureer riogression (Manadory rabile view)	Available at Annexure-B: Career Progression
10	Supporting Document: Occupational Man (Mandatory)	
10.	Supporting Document. Occupational Map (Mandatoly)	Available at Annexure-C: Occupational Map
11	Supporting Document: Assessment SOP (Mandatory)	
11.	Supporting Document. Assessment SOF (Mundulory)	Available at Annexure-D: Assessment SoP
12	Any other document you wish to submit:	Available at Appevure Er Evidence of Skill Con
12.		Available at Annexure E. Evidence of Skill Gap
		Available at Annexure F: Industry Validation

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	 Qualification Candidate of this certification will be equipped to: Advanced Expertise: Graduates will possess advanced proficiency in machine learning, deep learning, and neural networks, enabling them to develop and deploy sophisticated AI models. Practical Application: Graduates will apply their skills to real-world scenarios, demonstrating proficiency in cloud deployment, image processing, computer vision, and biomedical data analysis. Problem Solving: Graduates will have a strong problem-solving orientation, evidenced through case studies and 	 The job role and outcomes of the Associate Data Analyst qualification align closely with the NCrF/NSQF Level Descriptors for the Professional Theoretical Knowledge/Process category. Here's how they relate: Advanced Expertise: The outcomes of the qualification showcase an advanced understanding of machine learning, deep learning, and neural networks. This corresponds to the NCrF/NSQF descriptor's expectation of an indepth knowledge base and expertise in specialized areas. Practical Application: The graduates' ability to practically apply their skills in cloud deployment, image processing, computer vision, and biomedical data analysis is a direct match to the descriptor's emphasis on the application of theoretical knowledge to real-world situations. 	5
	practical projects that showcase their ability to	✓ Problem Solving: The emphasis on problem-solving through case	

Annexure-I: Evidence of Level

	analyze, develop, and implement AI solutions.	studies and practical projects aligns perfectly with the descriptor's requirement for graduates to effectively analyze, develop solutions, and implement AI technologies, showcasing their proficiency at a professional level	
Professional and Technical Skills/ Expertise/ Professional Knowledge	 Advanced Expertise: Graduates will demonstrate advanced proficiency in diverse machine learning algorithms, data analysis, and deep learning techniques, aligning with specialized technical skills. Effective Technical Communication: Graduates will excel in conveying complex technical concepts to both technical and non- technical stakeholders, showcasing strong communication abilities. Ethical and Responsible Practice: Graduates will exemplify ethical considerations in AI and machine learning, ensuring responsible technology 	 The job role and outcomes of the Associate Data Analyst qualification closely align with the NCrF/NSQF Level Descriptors for Professional and Technical Skills/Expertise/Professional Knowledge. Here's how they relate: ✓ Advanced Expertise: The outcomes of the qualification reflect graduates' advanced proficiency in machine learning algorithms, data analysis, programming languages, and deep learning techniques. This aligns with the descriptor's expectation of specialized technical skills and expertise. ✓ Effective Technical Communication: Graduates' ability to communicate complex technical concepts to both technical and non-technical stakeholders matches the descriptor's emphasis on effective communication skills. This skill is crucial for conveying 	5

	deployment and alignment with professional knowledge standards	insights and solutions to diverse audiences.	
		✓ Ethical and Responsible Practice: Graduates' understanding and practice of ethical considerations in AI and machine learning align with the descriptor's expectation of professional knowledge. Their commitment to responsible technology usage ensures they meet the ethical standards of the field.	
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	 Adaptability and Problem- Solving: Graduates exhibit adaptability, effective problem-solving, and critical thinking skills, aligning with the descriptor's focus on a growth mindset and analytical abilities. Entrepreneurial Outlook: Graduates demonstrate an entrepreneurial mindset, emphasizing innovation, leadership potential, and ethical practice, resonating with the descriptor's emphasis on proactive and 	 The job role and outcomes of the Associate Data Analyst qualification closely align with the NCrF/NSQF Level Descriptors for Employment Readiness & Entrepreneurship Skills & Mind- set/Professional Skill. Here's how they relate: ✓ Adaptability and Problem-Solving: The job role emphasizes graduates' adaptability, effective problem- solving, and critical thinking skills. This mirrors the descriptor's emphasis on a growth mindset, analytical abilities, and readiness to handle dynamic challenges. ✓ Entrepreneurial Outlook: Graduates' demonstration of an entrepreneurial mindset, 	5

	 ethical entrepreneurial skills. Collaboration and Communication: Graduates excel as collaborative team players with effective communication skills, aligning with the descriptor's focus on teamwork, communication, and industry engagement abilities. The Associate Data Analyst qualification's outcomes align seamlessly with the NCrF/NSQF Level Descriptors, ensuring graduates are equipped with the professional skills, mindset, and employability readiness 	 innovation, leadership potential, and ethical practice perfectly aligns with the descriptor's focus on proactive and ethical entrepreneurial skills. Their readiness to innovate and contribute resonates strongly. ✓ Collaboration and Communication: The job role highlights graduates' collaborative team player attitude, effective communication, and industry engagement. These align well with the descriptor's emphasis on teamwork, communication, and networking skills, ensuring graduates are industry-ready. Overall, the job role and outcomes of the Associate Data Analyst qualification aptly demonstrate a strong alignment with the NCrF/NSQF Level Descriptors for Employment
	and employability readiness necessary to excel in the field.	strong alignment with the NCrF/NSQF Level Descriptors for Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill. This alignment underscores graduates' comprehensive mastery of not just technical skills, but also the professional skills, mindset, and employability readiness demanded by the field.
Broad Learning Outcomes/Core Skill	 Critical Thinking: Graduates exhibit strong 	The job role and outcomes of the5Associate Data Analyst qualification

 critical thinking s analyzing comple and drawing insig conclusions, aligr the descriptor's e on critical reason Interdisciplinary Collaboration: Gr excel in collabora across disciplines innovation by dra insights from divu domains, matchin descriptor's focus interdisciplinary collaboration. Ethical Practice a Communication: Graduates demon ethical AI ML pra effective commu aligning with the descriptor's entited in the descriptor's entities 	 kills, closely align with the NCrF/NSQF Level x data Descriptors for Broad Learning Outcomes/Core Skill. Here's how they relate: relate: ✓ Critical Thinking: Graduates' ability to analyze complex data, identify patterns, and draw insightful conclusions directly corresponds to the descriptor's emphasis on critical reasoning and analytical skills. rese or critical reasoning and analytical skills. ✓ Interdisciplinary Collaboration: Graduates' proficiency in collaborating across diverse disciplines aligns perfectly with the descriptor's expectation of interdisciplinary collaboration, showcasing their capability to leverage insights from various domains. thical Practice and Communication: Graduates' demonstration of ethical AI ML practice and effective
The Associate Data A qualification's outcome	kills. practice and effective communication mirrors the descriptor's emphasis on ethical nalyst foundation and communication mes skills, ensuring they are wells
resonate well with th NCrF/NSQF Level De ensuring graduates p	rounded professionals. scriptors, ossess a

	versatile skill set for success in the AI and machine learning domain.	Overall, the job role and outcomes of the Associate Data Analyst qualification effectively demonstrate a strong alignment with the NCrF/NSQF Level Descriptors for Broad Learning Outcomes/Core Skill. Graduates are equipped with a versatile skill set, emphasizing critical thinking, interdisciplinary collaboration, and ethical practice, all essential for success in the AI and machine learning field.	
Responsibility	 Ethical Implementation: Graduates ensure ethical AI deployment, guarding against biases and discrimination. Robust Model Accountability: Graduates prioritize data security, privacy, and performance in AI model deployment. 	The job role and outcomes of the Associate Data Analyst qualification closely align with the NCrF/NSQF Level Descriptors for Responsibility. Here's how they relate: Ethical Implementation: Graduates' responsibility for ethical AI deployment directly corresponds to the descriptor's focus on ethical considerations and accountability in professional practice.	5
	 Continuous Learning: Graduates adapt to evolving Al landscape, responsibly driving informed decision- making. The Associate Data Analyst qualification's outcomes align with the NCrF/NSQF Level Descriptors, highlighting 	Robust Model Accountability: Graduates' accountability for robust model deployment resonates with the descriptor's emphasis on responsible decision-making, encompassing data security, privacy, and performance.	

graduates' commitment to ethical, accountable, and socially responsible AI ML practices.	Continuous Learning: Graduates' commitment to continuous learning and adaptation aligns with the descriptor's expectation of informed decision-making, showing their responsible approach to staying current.	
	 ✓ Overall, the job role and outcomes of the Associate Data Analyst qualification effectively demonstrate a strong alignment with the NCrF/NSQF Level Descriptors for Responsibility. Graduates' emphasis on ethical, accountable, and socially responsible AI ML practices underscores their readiness to contribute responsibly to the field. 	

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

List of Tools and Equipment Batch Size:

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Personal Computers or Laptops	Intel Core i5 or higher processor, 8GB RAM or	30
		more, 256GB SSD or higher storage, Wi-Fi	
		capability	

2	Python IDEs	Anaconda: Integrated development environment for Python with Jupyter Notebook and essential data science libraries	30
3	Version Control	Git: Distributed version control system for tracking changes in code and collaborating with team members	30
4	Learning Management System (LMS)	Moodle, Canvas, or similar platform for managing course content, assignments, and assessments.	1
5.	Cloud Platforms (AWS, Google Cloud, Microsoft Azure)	Access to AI/ML services, scalability, user- friendly interfaces.	30
6.	Power BI or Tableau	Data visualization tools for creating interactive dashboards and reports.	30

Classroom Aids

The aids required to conduct sessions in the classroom are:

- 1. Smart Boards/Projectors
- 2. White Board/Blackboard
- 3. Wi-Fi Connectivity Routers, Distribution Boards
- 4. Plug-points and other electric equipment/switchboards as required

Annexure -III: 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	Project Marks	Viva Marks
NOS 1: Bridge Module: Python for Data Science	 Python Fundamental Python for Data Working with Database 	15	25		
NOS 2: Data Analytics and Statistical Methods	 Python package for data science numpy pandas Data Visualization with Matplotlib Power BI Creating Maps and Visualizing Geospatial Data Statistical Analysis and Probability 	15	25		
NOS 3: Machine Learning	 Introduction Regression Classification Unsupervised Learning: Clustering Association rule mining algorithms including apriori Case Studies 	15	25		
NOS 4: Deep Learning	 Introduction Perceptron Feed Forward Neural Network Convolutional Neural Networks (CNNs) Architectures Recurrent Neural Networks Open Ended Problem – Project 	15	45		
NOS 5: MLOps	 Introduction DevOps Getting Started with AWS Containers Docker Swarm Kubernetes 	15	45		

 Problem-Solving: Strong problem-solving skills to identify data- related challenges and develop innovative solutions. 		
• Critical Thinking: The ability to think critically and approach complex problems with a logical and analytical mindset.		
 Effective Communication: The capability to convey complex technical information to non-technical stakeholders through reports, presentations, and documentation. 		
 Teamwork and Collaboration: Collaboration with cross- functional teams, including data engineers, domain experts, and business analysts, to achieve project goals. 		
 Continuous Learning: A commitment to staying updated with the latest developments in DS/ML through self-study, courses, conferences, and workshops. 		
 Project Management: Basic project management skills to plan, organize, and execute data science projects efficiently. 		
 Domain Knowledge: Depending on your specific industry or application area, having domain knowledge can be a significant advantage in understanding the context and nuances of data analysis. 		
 Adaptability: The ability to adapt to evolving technologies and methodologies in the rapidly changing DS/ML landscape. 		
 Business Acumen: Understanding the business goals and objectives to align data science efforts with the organization's needs and priorities. 		
• Coding Best Practices: Writing clean, maintainable, and well- documented code to facilitate collaboration and codebase management.		

	 Experimentation and A/B Testing: Experience in designing and conducting experiments to evaluate model performance and optimize outcomes. Resilience: Persistence and resilience to handle setbacks and iterate on solutions to challenging data problems. 			
Elective NOS 7: Natural Language Processing Nos 7: Computer Vision	 Introduction to NLP Text Processing Text Classification Language Modeling Machine Translation NLP Case Study Introduction Digital Image Formation and low-level processing Object Recognition Motion and Video Analysis 	15	45	
	Computer Vision for Biomedical Data Analysis Grand Total	105	245	

Annexure - IV: 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. Mention the detailed assessment strategy in the provided template.

1. ASSESSMENT SYSTEM OVERVIEW:

- For online assessment, batches shall be assigned to NCVET-approved AAs for conducting the assessment via an online assessment portal developed as per NCVET guidelines.
- For offline assessment, question papers shall be created by SMEs, and then batches shall be assigned to NCVET-approved AAs who shall deploy ToA-certified Assessors to execute the assessment.
- If the batch size is more than 30, then there should be 2 Assessors.
- The relevant SSC (in this case, the CSDCI) shall monitor the assessment process & records.

2. Testing Environment:

An Assessor must check the following:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP.
- Check the duration of the internship.
- Check the Assessment Start and End time as defined by SDMS or on the SIP.
- Check that the allotted time for the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment Online or Offline.
- Check the availability of the designated Proctor/s for conducting offline/online theory examinations.
- Check the availability of appropriate Tools and Equipment for conduct and assessment of practical examinations.

3. Assessment Quality Assurance levels/Framework:

- · Question bank is created by the Subject Matter Experts (SME) are verified by the other SMEs
- Questions are mapped to the specified assessment criteria
- Assessor must be ToA certified.
- Questions are mapped with NOS and Performance Criteria (mentioned in Annexure III)

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from the assessment location.
- Centre photographs with signboards and scheme-specific branding.
- Biometric or manual attendance sheet of the students during the Certification Training Period, including that of the Internship (duly stamped by the relevant Office/Firm/Company/Agency/Organization/Institute/Body etc. where the student/s has/have interned).
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos.

5. Method of verification or validation:

- A surprise visit to the assessment location
- Random audit of the batch
- Random audit of any candidate

6. Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored.
- Soft copies of the documents & photographs of the assessment are uploaded/accessed from Cloud Storage and are stored on Hard Drives.

Internship:

- The candidate must successfully complete 90 hours of Project-based Internship to earn two certification credits.
- Tools of Assessment that will be used for assessing that require candidates to develop end-to-end AI ML solutions, showcasing data collection, preprocessing, model building, and deployment, followed by a presentation that demonstrates their technical proficiency and ability to communicate complex concepts clearly.
- Videos of Trainees during Internship

<Associate Data Analyst>

- Assessment of each Module will ensure that candidates can:
- Demonstrate a solid understanding of AI ML concepts and techniques.
- Apply programming skills to create and implement machine learning models.
- Collaborate effectively in team projects, solving real-world data science challenges.

Analyze complex data sets and communicate actionable insights to stakeholders.

Annexure - V: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

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

https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio	
1	☑ heory/ Lectures - Imparting theoretical and	Smart Boards/Projectors	80.59% - Offline	
	conceptual knowledge	Workstations/Laptops	19.41% - Online	
2	Memparting Soft Skills, Life Skills, and Employability	Smart Boards/Projectors	100% Offline	
	Skills /Mentorship to Learners	Workstations/Laptops	100% - Offinie	
3	⊠howing Practical Demonstrations to the learners	Software, Cloud Based Platform Subscription	100% - Offline	
4	Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training	Laboratories having high configured system, software (Anaconda, GIT) installed in systems	100% - Offline	
5	⊠utorials/ Assignments/ Drill/ Practice	Class-room with good seating arrangement.	100% - Offline	
6	Proctored Monitoring/ Assessment/ Evaluation/ Examinations	Class-rooms with CCTV camera and proper seating arrangements	100% - Offline	
7	Mon the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Simulated Platform	100% - offline	

Annexure - VI : 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	
TIO	On the Job Training	

Description
IOS 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.
formal outcome of an assessment and validation process which is obtained when a
ompetent body determines that an individual has achieved learning outcomes to given standards
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.
s grouping of professional activities on the basis of their main economic function, product, service or technology.
ong-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf