QUALIFICATION FILE

Scientific Assistant in Data Science for Life Sciences

☒ 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: 4

Submitted By:

National Institute of Electronics and Information Technology (NIELIT)

NIELIT Bhawan,
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Section 1: Basic Details

1.	**Qualification Name**	**Scientific Assistant in Data Science for Life Sciences**	
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**	**QG-04-IT-02180-2024-V1-NIELIT**	**6. NCrF/NSQF Level: 4**
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**	**Nature**: ❖ This Short-term Certificate Course is targeted at creating qualified professionals in the field of Bioinformatics, which will help in the employment or Entrepreneurship development of the qualifier. ❖ This Qualification is aligned to Level 4. **Purpose:** The purpose of this qualification is to train the students of Life Sciences with the basics of Bioinformatics to skill them and increase their employability in the field of Life Sciences and allied disciplines.	

<table>
<tr><td>9.</td><td>Eligibility Criteria for Entry for Student/Trainee/Learner/Employee</td><td colspan="2">a. Entry Qualification & Relevant Experience:

<table>
<tr><th>S. No.</th><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>1.</td><td>12th Grade Pass with biology as mandatory subject</td><td>NA</td></tr>
<tr><td>2.</td><td>12th or Equivalent*</td><td>NA</td></tr>
</table>
* Biology should be the mandatory subject in class 12th or Equivalent and having knowledge of data crunching

b. Age: 16 Years</td></tr>
<tr><td>10.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>15 Credits</td><td>11. Common Cost Norm Category (I/II/III)
(wherever applicable):
Category II</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</td></tr>
<tr><td>13.</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>OJT Mandatory (Hours)</th><th>ES (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (Offline)</td><td>150</td><td>210</td><td>30</td><td>60</td><td>450</td></tr>
</table>
Training shall be conducted in any of the 3 modes depending on the regional need.</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td colspan="2">NCO Code
3141.9900: Life Science Technicians (Excluding Medical), Other</td></tr>
</table>

15.	**Progression path after attaining the qualification** *(Please show Professional and Academic progression)*	**Academic:** **Horizontal:** Level 4: Bioinformatics 'O' Level/ Level 4 Course in Basic Bioinformatics /Level 4 in IT/Bio-IT. **Vertical:** Level 5: Bioinformatics 'A' Level /Advanced-level Bioinformatics Courses like Translational Bioinformatics Associate /Higher level courses in Python Programming using AI/ML **Professional:** Scientific Assistant in Data Science for Life Sciences -> Analyst -> Database curator in industries -> Laboratory Assistant/Junior Technician in Bioinformatics/ Biotechnology/ Molecular Biology/ Drug Discovery/ Pharmaceutical R & D lab
16.	**Other Indian languages in which the Qualification & Model Curriculum are being submitted**	Qualification files available in English & Hindi Language.
17.	**Is similar Qualification(s) available on NQR-if yes, justification for this qualification**	☐ **Yes** ☒ **No URLs of similar Qualifications:**
18.	**Is the Job Role Amenable to Persons with Disability**	☒ **Yes** ☐ **No** **If "Yes", specify the applicable type of Disability:** *Locomotor Disability* *i. Leprosy Cured Person* *ii. Dwarfism* *iii. Acid Attack Victims*
19.	**How Participation of Women will be Encouraged**	Through funding from the Government under various schemes and projects.
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 the case of CS or MS, provide details of both Lead AB & Supporting ABs)*	From NIELIT: Name: Dr. Saurov Mahanta (Senior Technical Officer) Email: saurov@nielit.gov.in Contact No: 9435047023 Website: https://www.nielit.gov.in/guwahati	
23.	**Final Approval Date by NSQC: 15.03.2024**	**24. Validity Duration: 3 Years**	**25. Next Review Date: 15.03.2027**

Section 2: Module Summary

NOS/s of Qualifications

1. Algorithmic perspective of Bioinformatics and introduction to Bioinformatics tools.
2. Solving biological problems using Python programming.
3. Analysis and understanding of biomolecular structures using Bioinformatics tools.
4. Data security law.

Mandatory NOS/s of Qualifications

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.	OJT-Man.	Total	Th.	Pr.	Total	weightage (%) *(if applicable)*
1.	Algorithmic perspective of Bioinformatics and introduction to Bioinformatics tools	Code: NIE/SSC/N1801 Version- 1.0	Core	4	3	40	50	0	**90**	50	23	**73**	14.6
2.	Solving biological problems using Python programming	Code: NIE/SSC/N1802 Version- 1.0	Core	4	3	40	50	0	**90**	50	22	**72**	14.6
3.	Analysis and understanding of biomolecular structures using Bioinformatics tools	Code: NIE/SSC/N1803 Version- 1.0	Core	4	4	50	70	0	**120**	67	30	**97**	19.4

4.	Data security law	Code: NIE/SSC/N1804 Version- 1.0	Core	4	2	20	40	0	**60**	33	15	**48**	9.4
5.	Implementation of project on bioinformatics/OJT /*Project	-	Non-Core	4	1	0	0	30	**30**	0	0	**160**	32
6.	Employability Skills	Code: DGT/VSQ/N0102 Version- 1.0	Non-Core	4	2	20	40	0	**60**	0	0	**50**	10
				Total	**15**	**170**	**250**	**30**	**450**	**200**	**90**	**500**	**100**

Assessment Components	NOS Included	Duration (in min)	Marks
Theory 1: Scientific Assistant in Data Science for Life Sciences Paper-1	NOS-1, NOS-2	90	100
Theory 2: Scientific Assistant in Data Science for Life Sciences Paper-2	NOS-3, NOS-4	90	100
Practical-1: Scientific Assistant in Data Science for Life Sciences	NOS-1, NOS-2, NOS-3, NOS-4	120	90
Employability Skills	Internal Assessment on NOS-1, NOS-2, NOS-3, NOS-4	60	50
Implementation of project on bioinformatics/OJT	NOS 5	30	60
Major Project/Dissertation(Marks)*	NOS-1, NOS-2, NOS-3, NOS-4		100
Total:			**500**

* Along with the report on OJT, an additional dissertation has to be submitted by the trainee

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

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.)*

Minimum Pass Percentage – NOS/Module-wise: 50% *(Every Trainee should score a specified minimum passing percentage in each assessment component mentioned)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	M.Sc./M.Tech/B.Tech in Bioinformatics or Biotechnology 2 years of experience in Bioinformatics teaching and research and 3 year training/ in Assessment experience Bioinformatics or Biotechnology
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	M.Sc./M.Tech/B.Tech in Bioinformatics or Biotechnology and Minimum 3 years of experience in Bioinformatics teaching and research
3.	**Tools and Equipment Required for Training**	☒Yes ☐No Details available in Annexure-II
4.	**In Case of a Revised Qualification, Details of Any Upskilling Required for Trainer**	Trainers not having the above-mentioned qualification but having the qualification mentioned for a trainer can undergo training of trainers and certification for this qualification.

Section 4: 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 10+ years of experience
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	Online Theory Exam: The theory exam is conducted in online remote proctored mode. 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)*	An External Examiner/ Observer (Subject matter expert) 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 M.Sc./M.Tech/B.Tech in Bioinformatics or Biotechnology.
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

Section 5: Evidence of the need for the Qualification

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** Yes, Available in Annexure-B
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes, Available at Annexure-B
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes, Available at Annexure-B
4.	**Number of Industry validation provided:** 11
5.	**Estimated nos. of persons to be trained and employed:** 60 persons per year shall be trained in two batches.
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** No. 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***
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	***Available at Annexure-II***
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	***Available at Annexure-VI***
4.	**Annexure:** Assessment Strategy *(Mandatory)*	***Available at Annexure-VII***
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is "Blended Learning")*	***Available at Annexure-V***
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***
8.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	***Available at Annexure-A***
9.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	***Available at Annexure-VIII***
10.	**Supporting Document:** Occupational Map *(Mandatory)*	***Available at Annexure-E***
11.	**Supporting Document:** Assessment SOP *(Mandatory)*	***Annexure-C: Examination SoP***
12.	**Any other document you wish to submit:**	***Annexure-D: Trainers Qualification***

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. Candidates become familiar to Bioinformatics and are acquainted with the use of web-based and standalone tools for analyzing diverged biological information. 2. The theory and practical will provide a brief knowledge on: • How to generate and analyze the biological data by applying web-based tools. • Implementation of algorithm • Construction and curation of databases • Preparation, extraction and mining of data • Organization of reports and analysis	Scientific Assistant in Data Science for Life Sciences follows standard operating procedures while working on algorithm implementation, construction and curation of databases, extracting data/ data mining and preparing data for analysis. Also, he/she gets the defined formats in which they are expected to organize and report the analysis outcomes. All the above performance outcomes are routine and common in all the projects assigned to bioinformatics associate, hence are categorized as familiar and predictable processes where the bioinformatics associate has situation of clear choice	4
Professional and Technical Skills/ Expertise/ Professional Knowledge	After acquiring professional knowledge, the Candidate will have a good understanding of how to represent and generate the biological data in terms of digital form to analyze and interpreting the desired results.	To perform the tasks given in the lefthand side box, a Scientific Assistant in Data Science for Life Sciences needs to have the factual knowledge of omics field, biology science and software tools.	4
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	Besides the main stream Bioinformatics skills, Candidates can develop various IT-related skills such as: • Implementation of algorithm • Construction and curation of databases • Linux administration and networking • Decision-making skills, and	To perform the tasks of algorithm implementation, data extraction, mining and data analysis, a Scientific Assistant in Data Science for Life Sciences utilizes the professional skills like, Analytical Skills, Critical Skills, Problem Solving, Decision Making. To organize and report analysis and utilization of resources, he/ she uses the planning and	4

	• Communication skills for analyzing learning, and sharing information with others	organizing skills as well as customer centricity The scope of utilization of all above professional skills remains limited to routine and repetitive and for a narrow range of applications	
Broad Learning Outcomes/Core Skill	Candidate can have biological concepts and theories from various life science fields such Botany, Zoology, Human Biology and Microbiology etc., and also link those concepts to Computer Technology by acquiring the following: • Implementation of algorithms • construction and curation of databases • Extraction and mining of data • Organization and report analysis • Ensure compliance • Utilization of resources • Coordination with team members and cross functional teams	The job holder is expected to develop excellent logical and mathematical skill as well as understanding of industrial and natural environment with organizing information, communication and presentation skill.	4
Responsibility	1. Assistant/Laboratory Assistant 2. Junior Technician in Bioinformatics/Biotechnology/Molecular Biology/Drug Discovery/Pharmaceutical industries/R&D labs, whose role would be to assist the Scientist/analyst by doing Scientific experiments designed by his Senior scientist or Professor or Technical Officers	1. The job holder is expected to complete assigned tasks and IPR of organization & customers. 2. He/she is expected to undertake on-the-job learning and participate in training and development, interventions and assessments. 3. The individual working in such job role has complete responsibility for delivering quality of his own work & some responsibility for others works too and can be placed at level 4 And contribute in achieving the industry's profit margin.	4

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

List of Tools and Equipment

Batch Size: 30

Description		Quantity	Specifications
1	Classroom	1	30 m^2
2	Student Chair	30	
3	Student Table	30	
4	LCD Projector	1	
5	White Board	1	
6	Desktop Computers with accessories	30	Preferably installed with Linux OS. 9^{th} Generation Intel Core i9 processors with compatible integrated UHD graphics processing unit. Solid state drive of 256 GB storage and 16 GB RAM.

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	LinkedIn Profile *(if available)*
1	Assam Agricultural University	Dr. Probodh Borah	Professor & Head	Department of Animal Biotechnology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati, Assam 781022	9435116191	probodh.borah@aau.ac.in	https://www.linkedin.com/in/probodh-borah-38073b74/
2	AGT Biosciences (OPC) Private Limited	Dr. Akan Das	Managing Director	Late Madhab Kalita Premises, Near Circle Office Sarpara, Kamrup, Assam 781122	8011726712	dasakan@gmail.com	https://www.linkedin.com/in/akan-das-42821a101/
3	Gauhati University	Dr. Subhash Medhi	Assistant Professor	Department of Bioengineering and Technolgy, Gauhati University, Jalukbari, Guwahati, Assam 781014	7002485869	subhashmedhi@gauhati.ac.in	https://www.linkedin.com/in/subhash-medhi-7905a448/
4	Indian Institute of Technology Guwahati	Dr. Ranjan Tamuli	Professor	Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Assam 781039	9435342715	ranjantamuli@iitg.ac.in	https://www.linkedin.com/in/ranjan-tamuli-27a9381b4/
5	Indian Institute of Technology Roorkee	Dr. Deepak Sharma	Assistant Professor	Department of Biotechnology, Indian Institute of Technology Roorkee, Uttarakhand 247667	9582700727	deepak.aiims@gmail.com	https://www.linkedin.com/in/deepak-sharma-b8221a256/
6	Jawaharlal Nehru University	Dr. Mukesh Jain	Professor	School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi 110067	9871711699	mjain@jnu.ac.in	https://www.linkedin.com/in/mukesh-jain-62b4b5202/
7	Maulana Abul Kalam Azad University of Technology	Dr. Tufan Naiya	Assistant Professor	Maulana Abul Kalam Azad University of Technology, West Bengal, Haringhata, Nadia 741249	9830045343	tufan.naiya@makautwb.ac.in	Not Available
8	Mr. Biologist	Mr.	Administrati	Ground Floor, D-Building, MIT-WPU,	7768061282	info@askmrbiologist.	https://www.link

		Bashavloucha n Chetia	ve Officer	Paud Road, Kothrud, Pune 411038		com	edin.com/in/bas havlauchan-chetia-33337b253/
9	National Institute of Technology Arunachal Pradesh	Dr. Pallabi Kalita Hui	Assistant Professor	National Institute of Technology Arunachal Pradesh, Jote, Arunachal Pradesh 791113	8974498213	pallabikalita@nitap.ac.in	https://www.linkedin.com/in/pallabi-kalita-hui-98b10746/
10	Rajiv Gandhi University	Dr. Hui Tag	Professor	Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh 791112, Arunachal Pradesh	8131871644	hui.tag@rgu.ac.in	https://www.linkedin.com/in/dr-hui-tag-04718a49/
11	University of Science and Technology Meghalaya	Dr. Yugal Kishore Mohanta	Assistant Professor	Department of Applied Biology, School of Biological Sciences, University of Science and Technology Meghalaya, 9th Mile, Techno City, Baridua, Ri Bhoi, Meghalaya 793101	9439093024	yugalkmohanta@ustm.ac.in	https://www.linkedin.com/in/dr-yugal-kishore-mohanta-52981146/

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
2023-24	30	10	30	10	-	-
2024-25	60	20	60	20	-	-
2025-26	60	20	60	20	-	-

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 Job Training (OJT)/ Project Work Internship/ Apprenticeship Training	Simulated Platform	Either 100% online on virtual environment Or 100% offline in the Industry.

If the courses are conducted in the offline mode, the ratio of online and offline classes may vary by a maximum of 25%.

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	Total
NOS 1: Algorithmic perspective of Bioinformatics and introduction to Bioinformatics tools NOS Code: NIE/SSC/N1801	1. Introduction to Bioinformatics 2. Introduction to Basic Biology 3. Biological Data File formats 4. Sequence Alignment 5. Gene Prediction 6. Molecular Phylogeny 7. Pattern matching 8. Pathways and Systems Biology	50	23	73
NOS 2: Solving biological problems using Python programming NOS Code: NIE/SSC/N1802	1. Basic Computer Fundamentals 2. Basic scripting and Linux commands 3. Basic Programming in Python 4. Programming through functional decomposition 5. Aggregate data-types 6. Object Oriented Programming Concepts 7. Data structures	50	22	72

NOS 3: Analysis and understanding of biomolecular structures using Bioinformatics tools NOS Code: NIE/SSC/N1803	1. Basics of Protein Structure 2. Protein Structure Determination by X-ray diffraction 3. Structural Databases 4. Secondary Structure Prediction methods 5. Three-dimensional structure prediction and Structural alignment methods 6. Comparative/AI-based modelling of proteins 7. Modelling structures, interactions and dynamics using atomistic simulations	67	30	97
NOS 4: Data Security Law NOS Code: NIE/SSC/N1804	1. Introduction to Data Security Law 2. Legal Frameworks for Data Security 3. Compliance Requirements and Legal Obligations 4. Managing Data Breaches and Security Incidents 5. Risk Management and Compliance Strategies 6. Emerging Trends and Future Developments	33	15	48
Implementation of project on bioinformatics/OJT/*Project	1. Biological Sequence Alignment 2. Gene Prediction 3. Pathways and Systems Biology 4. Molecular Phylogeny	-	-	160
NOS5 : Employability Skills NOS Code: DGT/VSQ/N0102		-	-	50
	Grand Total	**500**		

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:

Horizontal:

- Level 4: Bioinformatics 'O' Level
- Level 4 Course in Basic Bioinformatics
- Level 4 in IT/Bio-IT.

Vertical:

- Level 5: Bioinformatics 'A' Level
- Advanced-level Bioinformatics Courses like Multiomics Data Analyst
- Higher level courses in Python Programming using AI/ML

Professional:

Scientific Assistant in Data Science for Life Sciences -> Analyst -> Database curator in industries -> Laboratory Assistant/Junior Technician in Bioinformatics/ Biotechnology/ Molecular Biology/ Drug Discovery/ Pharmaceutical R & D lab

Annexure-X: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body

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