NSQF QUALIFICATION FILE GUIDANCE

Version 1: Draft of 27 July 2017

NSDA Reference
To be added by NSDA

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

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List of documents submitted in support of the Qualifications File

1. Documentary Evidence of Need- (information is being collected and is awaited)
2. Curriculum with training plan
3. One Research Paper and one article showing evidence of need

SUMMARY

Qualification Title	Advanced certificate course in Para taxonomy
Qualification Code	-
Nature and purpose of the qualification	Nature of the qualification: Advanced Certificate course in Parataxonomy Purpose of the qualification: • Para taxonomy is the use of less qualified assistance to, or replacement of, taxonomists in the practice and science of classification. • Candidates who have successfully completed the basic course on Biodiversity Conservation are eligible to continue into the advanced course. • In the advanced course, the candidates will get intensive training to identify and authenticate plants/animals to qualify as 'Para-taxonomists', with separate specialization in flora, fauna, wetlands and medicinal plants.
Body/bodies which will award the qualification	MoEF&CC
Body which will accredit providers to offer courses leading to the qualification	MoEF&CC
Body/bodies which will carry out assessment of learners	BSI, ZSI and SACON
Occupation(s) to which the qualification gives access	Para taxonomists, involved in survey and documentation of flora and fauna, assistance to research work of BSI and ZSI, and assistance to regional offices of Wildlife Crime Control Bureau (WCCB)
Licensing requirements	Nil
Level of the qualification in the NSQF	Level 6
Anticipated volume of training/learning required to complete the qualification	420 hours (Theory- 170 hours Practical- 250 hours)
Entry requirements and/or recommendations	Class Xth Pass/Class XIIth Pass/ dropouts
Progression from the qualification	Master Trainers in Para taxonomy
Planned arrangements for the Recognition of Prior learning (RPL)	There is no arrangement of RPL as of now
International comparability where	Not known

known	
Date of planned review of the qualification.	March 2020

Formal structure of the qualification

Title of component and identification code.	**Mandatory/ Optional**	**Estimated size (learning hours)**	**Level**
Advanced Certificate Course on Floral Diversity:	O	35	6
(i) Plant Diversity	M		
(ii) Collection and identification of different plant groups	M	105	6
(iii) Processing and preservation of plant specimens (Herbarium Technique)	M	35	6
(iv) Eco-restoration of natural habitats	M	35	6
(v) In situ and ex situ Conservation	M	70	6
(vi) Gathering of pertinent information (Library/ Internet)	M	35	6
Advanced Certificate Course on Faunal Diversity:	O		
(i) The Science of Taxonomy	M	35	6
(ii) Taxonomic collections	M	140	6
(iii) Taxonomic survey and assessment of vertebrates	M	70	6
(iv) Basics of interpretation of biodiversity data using Biodiversity indices	M	35	6
(v) Importance of taxonomy	M	35	6
Advanced Certificate Course on Wetlands:	O		
(i) Introduction to Wetlands, classification, characteristics	M	35	6
(ii) Wetlands Ecosystem Services	M	70	6
(iii) Wetland Hydrology, Biogeochemistry, Wetland Soil, Water Quality, Physico-chemical characteristics, Microbial Analysis	M	105	6
(iv) Introduction to Conservation and Management: Threat factors	M	70	6
(v) Bioremediation, Groundwater management, Legislations and Protection, Protection of Wetland	M	35	6

Flora and Fauna, *in situ* and *ex situ* Remediation Technologies			
Advanced Certificate Course on Medicinal Plants and Traditional Knowledge:	O		
(i) Introduction to Medicinal plants & diversity	M	35	6
(ii) Folk nomenclature/taxonomy & medicinal plants	M	70	6
(iii) Field identification of medicinal plants species(vegetative and floral parts)	M	120	6
(iv) Traditional knowledge and documentation	M	70	6
(v) Examples of Conservation efforts	M	20	6
Common Module for Advanced course			
(i) GRIDSS (Basic, field work & practical) a. Introduction toGRIDSS b. Survey methods (Line transect, point count method, quadrat method) c. Resource mapping exercises locally- GBH readings, height, canopy cover d. Introduction to methods of Population count e. Methods for Documentation of Phenological data, causes of threats locally f. Use of GIS and GPS tools and applications for data collection and mapping g. Documentation of flora & fauna for PBRs	M	35	6
(ii) Hands on training in GIS (70 hours) a. Wetland Mapping: National and international importance including biodiversity hotspots. b. Population of endangered water birds c. Detailed GIS Syllabus Fundamentals of Computer, MS office, Internet and Email - Introduction to Geographical Information Systems and GIS software, Fundamentals of GIS: Layers and features, Raster/Vector- Georeferencing and projection, Spatial data and GIS basics; Data attributes and spatial topology, Projection / Image registration, Digitization and data attributes -map data representation, GPS.	M	70	6

SECTION 1
ASSESSMENT –

Body/Bodies which will carry out assessment:

The assessments will be carried out by the Evaluators of BSI/ZSI/SACON. These evaluators would be chosen from the experts who are not a part of the trainers. Based on the evaluation, certificates will be issued.

How will RPL assessment be managed and who will carry it out?

No RPL in this programme.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

The assessment will be done through theory, practical and viva exams at the end of the course. Moreover, students will be assessed regularly through questionnaires on every module in the classroom.

For practical examination, the trainers as well as course supervisors will constantly keep a vigil on the trainees. Any errors committed by the trainees will be corrected then and there; a learning by doing technique will be adopted for practical assessment.

In theory, a final examination will be conducted at the end of the course, in which 50% scoring will be considered to be as qualifying marks. The Assessments will be conducted through English/Hindi Questionnaires. However, the Invigilators (not Trainers/Supervisors) will be empowered to explain/translate the question to the trainees in their regional language, if required. The trainers will not be involved in the assessment, whatsoever, at any point.

ASSESSMENT EVIDENCE

Title of Component: Parataxonomists – Advanced Course

Learning Outcome	Assessment outcome description	Assessment criteria for the outcome
Advanced Understanding on **Floral Diversity**	• Understanding Plant Diversity, Collection • identification of different plant groups, Processing and preservation of plant specimens (Herbarium Technique), • Understanding the concept of	By conducting Evaluation Test- both theory and Practical

	Eco-restoration of natural habitats and In situ - ex situ Conservation • Identification of Biodiversity hotspots and endemic plants of India, • Understanding IUCN Red List and application of methods of collecting plant species, • Documentation of PBRs and different preservation methods • Identification of degraded and natural habitats, • Removal of non native species and weeds, • Understanding maintenance of seed bank, gene bank, Aichi targets, • Explain the concept of conservation on Biodiversity sites, Ramsar Sites, Biosphere reserves	
Advanced Understanding on **Floral Diversity**	• Understanding the concept of Taxonomy, taxonomic collections, Taxonomic survey and assessment of vertebrates, biodiversity indices • Understand bionomial nomenclature, integrative taxonomy, advanced concepts in faunal taxonomy, • Understanding Taxonomic descriptions, Faunal checklists and their relevance in biodiversity research • Preparation of specimens for taxonomic studies • Cataloguing and databasing and maintenance of collections/Museum specimens • Identification of the locally	By conducting Evaluation Test- both theory and Practical

	Common butterflies and Odonates using field guides, • Understanding Mammal census techniques, Bird count/census techniques, Status surveys of animals, Environmental impact studies,	
Advanced Understanding on Wetlands diversity	• Understand characteristics, maintenance of National Wetland inventory • Understand and undertake ground water replenishment, Shoreline stabilisation and storm protection, Sediment and nutrient retention and export, Water purification, Reservoirs of biodiversity, • Documentation of flora and fauna for PBRs, • Understanding Concepts of Wetland Hydrology, Wetland Biogeochemistry, Wetland Soil and water quality, • Understanding microbial analysis of soil and water, types of wetland pollution, impacts, restoration and treatment • Understanding of bioremediation, groundwater management, laws and protection, current practices	By conducting Evaluation Test- both theory and Practical
Understanding Medicinal Plants and traditional knowledge	• Understanding plant species with medicinal uses, knowledge of Folk nomenclature/taxonomy. Understanding significance of local names for plants-regional diversities, • Undertaking field identification of plants • Understanding the concept of Botanical survey – planning-	By conducting Evaluation Test- both theory and Practical

	preparation-collection- • Undertaking recording of field notes-GPS readings-digitization process, Herbarium Techniques, Local Health Traditions, • Understanding of Indian Systems of Medicine, Non-Timber forest Produce (NTFP)- • Understanding sustainable collections sites-value addition sites, legal protections and implications-Role of State Biodiversity Boards	
GRIDSS (Basic, field work and practical)	• Undertake surveys, resource mapping exercises, population count exercises • Documentation of phonological data, use of GIS and GPS tools and applications for data collection and mapping	By conducting Evaluation Test- both theory and Practical
Means of assessment 1 Theory and Practical exam on field and through Viva-voce		
Means of assessment 2 Set up of relevant and qualitative questions, Multiple Choice Questions (MCQ) for theory assessment. Conducting practical exams on selective Modules.		
Pass/Fail The pass mark for Theory exam (Multiple Choice Questionnaire) will be 50 out of 100. In Practical, 75 marks for Practical exam and 25 marks for viva-voce. Pass mark will be 50 marks but in Practical exam Trainee should score at least 40 marks out of 75.		

SECTION 2
EVIDENCE OF LEVEL

Title/Name of qualification/component: Parataxonomists Level: 6			
NSQF Domain	**Outcomes of the Qualification/Component**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
Process	Trainees would get an advanced knowledge of either flora, fauna, medicinal plants or wetlands, depending on the course chosen. They will be able to identify and document species, and also train others. Different types of wetlands, their properties and importance are learnt by the Trainees. They are able to identify economically important plants, Medicinal plants on the field; trainees are able to collect the data on Traditional Knowledge in a particular area. Gaining knowledge about various environmental issues of their region, various laws, rules and regulations of environment, conservation methods, Aichi Targets, Biodiversity laws, IUCN Categories etc.	Para taxonomists should possess an advanced knowledge of biodiversity and its components. They are required to be skilled in their field and will be able to act as master trainers at the end of the course. They have clear knowledge of rules and regulations, acts and issues in their field.	6
Professional knowledge	Trainees are able to collect data on flora and fauna, Traditional Knowledge, local names of plants, preservation of biological specimens. Also gain basic knowledge of People's Biodiversity Register (PBR). Preparation of land, raising plants from seeds, various vegetative propagation methods, manuring, watering and composting methods are learnt by the trainees. Learning of major environmental issues, community conservation issues, protected areas, biodiversity acts, flora and fauna in the list of wildlife protection, wetland laws and access benefit sharing.	As Para taxonomists will have advanced knowledge of facts, principles, processes and concepts- both in theory and in field, therefore this qualifies to be level 6	6

Title/Name of qualification/component: Parataxonomists Level: 6			
NSQF Domain	**Outcomes of the Qualification/Component**	**How the job role relates to the NSQF level descriptors**	**NSQF Level**
Professional skill	Parataxonomists are able to independently undertake eco restoration of natural habitats, have knowledge of advanced conservation techniques, in situ and ex situ conservations, knowledge of protected areas and biosphere as well as wildlife reserves. Apart from being able to routinely identify various species of flora and fauna, help in conservation, and in maintaining PBRs, they will also be able to become Master trainers in their field. Trainees will be able to assess the Biodiversity, its threat factors, environmental issues, laws, rules and regulations to be implemented in legal protections and in conservation efforts.	Trainees will possess practical skill to conduct conservation and restoration of degraded sites and help local communities to undertake such activities.	6
Core skill	In terms of core skills acquired, trainees will gain advanced knowledge of computers, MS Office, GIS, GPS and other software tools for conducting survey and documentation. They are required to have some working knowledge of English and have personnel skills in order to engage local communities in conservation activities.	As the communication both oral and written will be required to carry out the activities related to conservation, collection of data, survey, documentation of flora and fauna, along with advanced knowledge of computer and English, Level 5 descriptor matches this skill	6
Responsibility	Parataxonomists are able to independently initiate community conservation, protection of local flaura and fauna, In-situ conservation of biologically rare species. They are able to stop the illegal cutting, uprooting, felling and trading of the plants, trafficking of animal species species listed in the Scheduled List of Wildlife Protection Act, to implement the wetland and other laws strictly, to verify NTFPs Permission is strictly followed or not.	The trainees will be be responsible for the data collected and surveys undertaken and also will be responsible for other's works and learning as Master trainers; therefore level 6 is being allocated.	6

SECTION 3
EVIDENCE OF NEED

What evidence is there that the qualification is needed?

A research report by M.D. Subhash Chandran, T.V. Ramachandra and Prakash N. Mesta, published by Centre for Ecological Sciences is attached. It highlights the huge potential for harnessing the student power for documentation of the immense biodiversity of the country. The identification, various types of living organisms, their role in ecosystem, etc. are pertinent to conserve the Biodiversity.

Another article by Nematode Research Laboratory, Department of Zoology, Aligarh Muslim University shows the importance of studying taxonomy in recent times both for awareness as well as employment generation. This study was published in 2014 and has been attached.

What is the estimated uptake of this qualification and what is the basis of this estimate?

The programme, one of its kind, has been initiated on pilot basis in 2017-18. We had projected an uptake of 100 students. The foundation course is currently training 70 students enrolled in 9 bio geographic regions of the country. The Advanced course is due to start in October, 2017. We have received encouraging feedback and the foundation course has been highly appreciated. There have been minimal drop outs in the programme so far. We therefore expect a rise of 25% every year.

What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?

National Qualifications Register was searched to assess if there was any similar qualification programme initiated in this field. The NSDA officials were also consulted a couple of times wherein it was mentioned that such a programme has not been introduced anywhere in the country.

What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

Feedback would be taken from experts, students and teachers regarding the course content, structure and timeline of the programme. Feedback will also be taken from the Centres conducting the course. Changes suggested will be assessed by the Ministry before incorporating them in the curriculum. Next review will be done in March 2018.

SECTION 4
EVIDENCE OF PROGRESSION

What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

Foundation Course certificate holders will be eligible to apply for the Advanced course in parataxonomy. These advanced course certificate holders will be eligible to become Master trainers through on the job training in this field. They will be able to assist ground truth verification of various schemes of the Ministry as well as be employed in BSI and ZSI as per need. They can also be employed in Wildlife Crime Control Bureau (WCCB) regional offices for assisting the Wildlife Inspectors after getting relevant experience. These certificate holders are also free to take up any other training course in the field of environment protection and conservation that the Ministry plans to conduct in the future.