



**Maldives National Skills Development Authority**



# **National Competency Standard for Food Chemistry and Toxicology**

**Standard Code: FNA-11L4-V1-24**

**Qualification Name: National Certificate IV in Food Chemistry and Toxicology**

## FOREWORD

The pivotal role of the Maldives National Skills Development Authority (MNSDA) in meticulously implementing and expanding Technical and Vocational Education & Training (TVET) exemplifies the steadfast commitment of the Maldives to build a skilled and resilient workforce. This commitment is evident from the strategic formulation of National Standards and the establishment of a comprehensive framework for training and certification.

Under the Higher Education and Training Act 7/2021, the MNSDA assumes an instrumental role, reflecting the government's unwavering dedication to streamlining TVET policies and procedures. This includes the establishment of a robust system for accrediting and registering both Institution Based Training (IBT) and Employer Based Training (EBT) providers. The MNSDA's active involvement in conducting the National Apprenticeship Program (NAP), National Trade Testing and Certification (NTTC), and the issuance of National Certificates reflects a comprehensive approach to ensure elevated quality standards and competency within the workforce.

The National Competency Standards (NCS) revised through the Maldives Enhancing Employability and Resilience of Youth (MEERY) project accentuates the commitment to updating and sustaining contemporary skill sets aligned precisely with industry demands. Deliberate efforts to revise existing NCS, coupled with the development of curriculum, teaching materials, resource books, and logbooks, attest to our dedication to ensuring the ongoing relevance and currency of the TVET system in the Maldives.

The active engagement of Technical Panels and Employment Sector Councils in the NCS development and approval process, coupled with alignment to the Maldives National Qualification Framework (MNQF) and accreditation by the Maldives Qualifications Authority (MQA), certifies that the TVET system not only remains highly responsive but also ensures the quality standards demanded by industries. This approach enables the system to effectively meet the diverse needs of industries and adapt to the evolving economic landscape.

The collaborative development of the National Certificate IV in Food Chemistry and Toxicology by the MNSDA, MEERY, and the Maldives Institute of Technology exemplifies the practical implementation of TVET initiatives. This training package represents a critical stride towards addressing the requisite skills while fostering opportunities to integrate sustainable economic development within the TVET framework.




Dr. Zahra Mohamed

Chief Executive Officer

Maldives National Skills Development Authority

EMPLOYMENT SECTOR COUNCILS			
#	Name	Designation	Organisation
01	Dr.Hussain Sinan	Director	Ministry of Fisheries and Ocean Resources
02	Ali Amir	Director	Ministry of Agriculture and Animal Welfare
03	Musthafa Abdul Gafoor	Senior Policy Officer	Ministry of Economic Development & Trade
04	Mifrah Naseem	General Manager- Sales and Marketing	Maldives Industrial Fisheries Company Limited
05	Dr. Ahmed Riyaz Jauhary	Deputy Director General	Maldives Marine Research Institute
06	Adnan Ali	Board Director / Advisor	Horizon Fisheries
07	Maizan Ahmed Manik	Chairman	Maizan Electronics
08	Aishath Shazleena	HR Manager	Agro National Corporation Ltd (AgroNat)
09	Shakeeba Ali	Director General	Maldives National Skills Development Authority

**National Occupational Standard has been endorsed by:**



Dr. Ahmed Riyaz Jauhary  
Chairperson  
Fisheries and Agriculture Sector Council

Maldives National Skills Development Authority  
Umar Zahir Office Building, 5<sup>th</sup> Floor,  
Orchid Ma higon, HulhuMale' , Republic of Maldives.

Date of Endorsement: 03.09.2024

TECHNICAL SUPPORT			
#	Name	Designation	Organisation
01			
02			

TECHNICAL PANEL MEMBERS			
#	Name	Designation	Organisation
01	Shazra Ibrahim	Senior Food Quality Assurance Officer	Maldives Food and Drug Authority
02	Ali Ahmed	Senior Production Manager	Ensis Fisheries
03	Aiminath Moomina	Labotry technologist	Maldives Food and Drug Authority

VERSION	DEVELOPER	DATE	STANDARD CODE
V1	Maldives Institute of Technology	28/05/2024	FNA-11L4-V1-24

## Standard Development Process

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The development of the “National Certificate IV in Food Chemistry and Toxicology” Standard involved a comprehensive study of Food Chemistry and Toxicology occupations in Maldivian workplaces, with a focus on related enterprises. Job descriptions and international occupational trends were analysed to draft an initial Occupational Standard. This draft will undergo further refinement through a Technical Panel (TP) from Maldivian workplaces, ensuring incorporation of competencies and edits. The TP will provide technical input, suggesting changes to the standard, until a final draft is agreed upon. The approved Final Draft will then be submitted to the Fisheries & Agriculture Employment Sector Council for endorsement and validation. A brief report detailing the compilation process will accompany the Standard for the Council's review, and any recommended changes will be addressed before final endorsement.

With the endorsement from the Fisheries & Agriculture Employment Sector Council, the finalised National Occupational Standard for Food Chemistry and Toxicology will be submitted to the Maldives Qualification Authority (MQA) for final approval. Upon receiving MQA approval, the standard will be officially published on the Maldives National Skills Development Authority (MNSDA) website. This publication will enable training providers in the Maldives to utilise the standard for delivering the Food Chemistry and Toxicology program, ensuring its widespread implementation across the country

## Description of “Food Chemistry and Toxicology”

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The National Certificate Level IV in Food Chemistry and Toxicology is designed to equip learners with a comprehensive foundation in the principles and practices of food chemistry and toxicology. Participants will explore key topics including the chemical composition of foods, the role and safety of food additives and preservatives, identification of food contaminants, and an introduction to foodborne diseases and toxins.

This course is designed for individuals entering the field, aiming to equip them with essential skills and understanding required for various roles in the food industry.

## Proposed Qualification Titles

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Following are the recommended titles by the selected internal expert team of MIT for the National Certificate IV in Food Chemistry and Toxicology.

1. Nil-

## Job opportunities upon completion of “National Certificate IV in Food Chemistry and Toxicology”

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Upon successful completion of the National Certificate IV in Food Chemistry and Toxicology, students can work in the following jobs.

1. *Food Safety Officer*
2. *Assistant Food Chemist*

## KEY FOR CODING

### Coding Competency Standards and Related Materials

DESCRIPTION	REPRESENTED BY
Industry Sector as per ESC (Three letters)	Construction Sector (CON) Fisheries and Agriculture (FNA) Information, Communication and Technology (ICT) Transport Sector (TRN) Tourism Sector(TOU) Social Sector (SOC) Foundation (FOU)
Standard Number - Occupation with in an industry sector	Two digits 01-99
Common Competency	CM
Core Competency	CC
Unit Number - Occupation within n Standard	Three digits 01-99
MNQF level of qualification	L1, L2, L3, L4 etc.
Version Number	V1, V2 etc.
Separator	-
Year of Last Review of standard, qualification	Two digits responding to the year of last review, example 23 for the year 2023
Qualification Code	Refers to Standard code in cover page

1. Endorsement Application for Qualification 01		
2. NATIONAL CERTIFICATE IV IN FOOD CHEMISTRY AND TOXICOLOGY		
3. Qualification code: FNA-11L4-V1-24		Total Number of Credits: 120
<b>4. Purpose of the qualification</b> The purpose of the National Certificate Level 4 in Food Chemistry and Toxicology is to provide learners with essential knowledge and skills in the fields of food chemistry and toxicology. This qualification aims to equip individuals with the competencies required to ensure the safety, quality, and integrity of food products.		
5. Regulations for the qualification		National Certificate IV in Food Chemistry and Toxicology will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13
6. Schedule of Units		
Unit No.	Unit Title	Code
Common Competencies		
01	Participate in sustainable work practices	FNA-01-CM07-V2-24
02	Apply work ethics and manage diversity in the workplace	FNA-01-CM10-V2-24
03	Understand fundamental chemistry to food	FNA-11-CM01-V1-24
04	Understand fundamental biology to food	FNA-11-CM02-V1-24
05	Respond to emergency situations	FNA-02-CM05-V1-24
Core Competencies		
06	Understand food chemistry principles	FNA-11-CC01-V1-24
07	Understand analytical methods in food chemistry	FNA-11-CC02-V1-24
08	Understand basic chemical composition of food	FNA-11-CC03-V1-24
09	Identify food additives and preservatives	FNA-11-CC04-V1-24
10	Understand principles of toxicology	FNA-11-CC05-V1-24
11	Recognise food contaminants	FNA-11-CC06-V1-24
12	Understand foodborne diseases and toxins	FNA-11-CC07-V1-24
13	Understand risk analysis in food processing and preservation	FNA-11-CC08-V1-24
7. Accreditation requirements		The training provider should have a workshop or similar training facility to provide the trainees the hands-on experience related to this qualification and related hours of industrial experience. - Student must acquire 120 hours of Industrial Training
8. Recommended sequencing of units		As appearing under the section 06



## Unit Details

Unit No.	Unit Title	Code	Level	No. of credits	Credit hours	Contact hours
01	Participate in sustainable work practices	FNA-01-CM07-V2-24	IV	04	40	20
02	Apply work ethics and manage diversity in the workplace	FNA-01-CM10-V2-24	IV	15	150	75
03	Understand fundamental chemistry to food	FNA-11-CM01-V1-24	IV	10	100	50
04	Understand fundamental biology to food	FNA-11-CM02-V1-24	IV	10	100	50
05	Respond to emergency situations	FNA-02-CM05-V1-24	III	05	50	25
06	Understand food chemistry principles	FNA-11-CC01-V1-24	IV	10	100	50
07	Understand analytical methods in food chemistry	FNA-11-CC02-V1-24	IV	12	120	60
08	Understand basic chemical composition of food	FNA-11-CC03-V1-24	IV	08	80	40
09	Identify food additives and preservatives	FNA-11-CC04-V1-24	IV	08	80	40
10	Understand principles of toxicology	FNA-11-CC05-V1-24	IV	08	80	40
11	Recognise food contaminants	FNA-11-CC06-V1-24	IV	09	90	45
12	Understand foodborne diseases and toxins	FNA-11-CC07-V1-24	IV	08	80	40
13	Understand risk analysis in food processing and preservation	FNA-11-CC08-V1-24	IV	13	130	65
Total				120	1200	600

### Packaging of National Qualifications:

National certificate IV in Food Chemistry and Toxicology will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13

Qualification Code: FNA-11L4-V1-24



## COMPETENCY BASED ASSESSMENT

The final assessment of the National Competency-Based Programmes conducted by the Maldives National Skills Development Authority (MNSDA) is a competency-based assessment.

The Competency-Based Assessment ensures that the students' performance meets the requirements specified in the National Competency Standards (NCS). This assessment approach is designed to verify that graduates are job-ready and meet established occupational competency requirements within their respective fields.

### Eligibility for Final Assessment

To be eligible for the final Competency-Based Assessment, students must fulfil the following conditions:

- achieve a **minimum of 80%** attendance
- deemed competent in each of the units of the programme in the pre-assessment

### Competency-Based Assessment Process

Upon submission of the Pre-assessment report by the training provider, MNSDA will check for all the necessary supporting documents and conduct Competency-Based Assessment through a National Assessor registered with MNSDA. It is important to note that any trainer involved in the training process is **not permitted** to conduct the assessment to maintain impartiality and integrity of the process.

The final Competency-Based Assessment conducted by MNSDA includes both:

- **Theory:** Evaluating students' knowledge and understanding of key theoretical aspects of the competency.
- **Practical:** Assessing hands-on skills and application of knowledge in real-world or simulated environments.

Once the assessment is completed, the National Assessor will send the Competency-Based Assessment Report to MNSDA.

### Competency Status Requirement

For certification to be granted, the student must be officially declared "**Competent**" in each of the units of the programme by the National Assessor.

### Conclusion

Competency-Based Assessment is a critical component in ensuring the quality and credibility of technical and vocational skills-based training. By adhering to the outlined procedure, MNSDA upholds the standards required to certify students who are fully prepared to meet industry demands.