सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

NCVET
कौशल गुणवत्ता प्रगति

N·S·D·C
RE IMAGINE FUTURE

Qualification Pack

Artificial Intelligence Application Developer

QP Code: MSME/SSC/Q3902

Version: 1.0

NSQF Level: 4.5

MSME TECHNOLOGY CENTRE ||
B-36 CHANDAKA INDUSTRIAL AREA || email:msmeexamcell@gmail.com

Contents

Qualification Pack

MSME/SSC/Q3902: Artificial Intelligence Application Developer

Brief Job Description

The Artificial Intelligence Developer Qualification will cover the fundamentals of Python programming and libraries like Numpy and pandas used for data analysis.The course will also cover Visualization with Matplotlib. The course will lay stress on developing programming skills by providing practical exposure to the aspiring Python developers and also introduce to the concepts of Machine Learning. Participants from any background can develop the skills needed to become an AI Assistant.

Personal Attributes

Analytical and logical thinking Teamwork and collaboration

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. MSME/SSC/N3925: Fundamentals of Deep learning
2. MSME/SSC/N3924: Fundamentals of Deep learning
3. MSME/SSC/N3923: Performance and Accuracy of Machine learning models
4. MSME/SSC/N3922: Performance and Accuracy ofMachine Learning models
5. MSME/SSC/N3921: Fundamentals of Machine learning
6. MSME/SSC/N3920: Fundamentals of Machine learning
7. MSME/SSC/N3919: Data analysis and Visualization
8. MSME/SSC/N3918: Data analysis and Visualization
9. MSME/SSC/N3917: Conceptualizing Data Science with python
10. MSME/SSC/N3916: Conceptualizing Data Science with Python
11. MSME/SSC/N3913: Employability Skill 07
12. MSME/SSC/N3915: Programming with Python
13. MSME/SSC/N3914: Programming with Python

Qualification Pack (QP) Parameters

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

NCVET
कौशल गुणवत्ता प्रगति

N·S·D·C
RE IMAGINE FUTURE

Qualification Pack

Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Developer , Software Engineering
Country	India
NSQF Level	4.5
Credits	27
Aligned to NCO/ISCO/ISIC Code	NCO-2015 /2511.0106
Minimum Educational Qualification & Experience	Completed 1st year of UG (UG Certificate) OR Pursuing 1st year of UG and continuous education OR Pursuing 3rd year of 3-year diploma after 10th (continuous education) OR Completed 3-year diploma (after 10th) OR Completed 2nd year diploma after 12th (2 year of diploma) OR Pursuing 2nd year of 2-year diploma after 12th and continuous education OR 8th grade pass (Previous relevant Qualification of NSQF Level 4) with 1.5 years of experience
Minimum Level of Education for Training in School	8th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	29/07/2028
NSQC Approval Date	29/07/2023
Version	1.0
Reference code on NQR	QG-4.5-IT-00358-2023-V1-NIELIT
NQR Version	1.0

Qualification Pack

MSME/SSC/N3925: Fundamentals of Deep learning

Description

Understand the core concepts of deep learning, including neural networks, activation functions, training techniques, and their applications in solving complex real-world problems.

Scope

The scope covers the following :

- Understand the core concepts of deep learning, including neural networks, activation functions, training techniques, and their applications in solving complex real-world problems.

Elements and Performance Criteria

NIE/ITS/N14020

To be competent, the user/individual on the job must be able to:

PC1. Understand and implement Deep Learning using Neural Networks

PC2. Work in Computer Vision using CNN and implement Image based models

PC3. Understand NLP and implement Natural Language Processing algorithms

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14020	**-**	**100**	**-**	**-**
PC1. Understand and implement Deep Learning using Neural Networks	-	-	-	-
PC2. Work in Computer Vision using CNN and implement Image based models	-	-	-	-
PC3. Understand NLP and implement Natural Language Processing algorithms	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3925
NOS Name	Fundamentals of Deep learning
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

Qualification Pack

MSME/SSC/N3924: Fundamentals of Deep learning

Description

Understand the core concepts of deep learning, including neural networks, activation functions, training techniques, and their applications in solving complex real-world problems.

Scope

The scope covers the following :

- Understand the core concepts of deep learning, including neural networks, activation functions, training techniques, and their applications in solving complex real-world problems.

Elements and Performance Criteria

NIE/ITS/N14020

To be competent, the user/individual on the job must be able to:

PC1. Understand and implement Deep Learning using Neural Networks

PC2. Work in Computer Vision using CNN and implement Image based models

PC3. Understand NLP and implement Natural Language Processing algorithms

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14020	**100**	**-**	**-**	**-**
PC1. Understand and implement Deep Learning using Neural Networks	-	-	-	-
PC2. Work in Computer Vision using CNN and implement Image based models	-	-	-	-
PC3. Understand NLP and implement Natural Language Processing algorithms	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3924
NOS Name	Fundamentals of Deep learning
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

Qualification Pack

MSME/SSC/N3923: Performance and Accuracy of Machine learning models

Description

Learn to evaluate and improve machine learning models using performance metrics, validation techniques, and optimization methods to achieve accurate and reliable predictions.

Scope

The scope covers the following :

- Learn to evaluate and improve machine learning models using performance metrics, validation techniques, and optimization methods to achieve accurate and reliable predictions.

Elements and Performance Criteria

NIE/ITS/N14019

To be competent, the user/individual on the job must be able to:

PC1. Implement Predictive Analysis using various Regression and Classification algorithms

PC2. Learn and apply statistics used in Machine Learning

PC3. Using various metrics and Feature Engineering techniques

PC4. Develop and Implement Project in Predictive Analysis using ML

PC5. Working on tools for getting interactive insights from data - Power BI desktop, Tableau Public

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14019	**-**	**100**	**-**	**-**
PC1. Implement Predictive Analysis using various Regression and Classification algorithms	-	-	-	-
PC2. Learn and apply statistics used in Machine Learning	-	-	-	-
PC3. Using various metrics and Feature Engineering techniques	-	-	-	-
PC4. Develop and Implement Project in Predictive Analysis using ML	-	-	-	-
PC5. Working on tools for getting interactive insights from data - Power BI desktop, Tableau Public	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3923
NOS Name	Performance and Accuracy of Machine learning models
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Developer , Software Engineering
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3922: Performance and Accuracy ofMachine Learning models

Description

Learn to evaluate and improve machine learning models using performance metrics, validation techniques, and optimization methods to achieve accurate and reliable predictions.

Scope

The scope covers the following :

- Learn to evaluate and improve machine learning models using performance metrics, validation techniques, and optimization methods to achieve accurate and reliable predictions.

Elements and Performance Criteria

NIE/ITS/N14019

To be competent, the user/individual on the job must be able to:

PC1. Implement Predictive Analysis using various Regression and Classification algorithms

PC2. Learn and apply statistics used in Machine Learning

PC3. Using various metrics and Feature Engineering techniques

PC4. Develop and Implement Project in Predictive Analysis using ML

PC5. Working on tools for getting interactive insights from data - Power BI desktop, Tableau Public

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14019	**100**	**-**	**-**	**-**
PC1. Implement Predictive Analysis using various Regression and Classification algorithms	-	-	-	-
PC2. Learn and apply statistics used in Machine Learning	-	-	-	-
PC3. Using various metrics and Feature Engineering techniques	-	-	-	-
PC4. Develop and Implement Project in Predictive Analysis using ML	-	-	-	-
PC5. Working on tools for getting interactive insights from data - Power BI desktop, Tableau Public	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3922
NOS Name	Performance and Accuracy ofMachine Learning models
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Developer , Software Engineering
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3921: Fundamentals of Machine learning

Description

Understand the basic concepts of machine learning, including data preprocessing, model building, training, evaluation, and real-world applications using Python.

Scope

The scope covers the following :

- Understand the basic concepts of machine learning, including data preprocessing, model building, training, evaluation, and real-world applications using Python.

Elements and Performance Criteria

NIE/ITS/N14018

To be competent, the user/individual on the job must be able to:

PC1. Introduction to Machine Learning

PC2. Learning various ML categories

PC3. Learning to build models on datasets

PC4. Exploring the outputs of models

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14018	**-**	**100**	**-**	**-**
PC1. Introduction to Machine Learning	-	-	-	-
PC2. Learning various ML categories	-	-	-	-
PC3. Learning to build models on datasets	-	-	-	-
PC4. Exploring the outputs of models	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3921
NOS Name	Fundamentals of Machine learning
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

Qualification Pack

MSME/SSC/N3920: Fundamentals of Machine learning

Description

Understand the basic concepts of machine learning, including data preprocessing, model building, training, evaluation, and real-world applications using Python.

Scope

The scope covers the following :

- Understand the basic concepts of machine learning, including data preprocessing, model building, training, evaluation, and real-world applications using Python.

Elements and Performance Criteria

NIE/ITS/N14018

To be competent, the user/individual on the job must be able to:

PC1. Introduction to Machine Learning

PC2. Learning various ML categories

PC3. Learning to build models on datasets

PC4. Exploring the outputs of models

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14018	**100**	**-**	**-**	**-**
PC1. Introduction to Machine Learning	-	-	-	-
PC2. Learning various ML categories	-	-	-	-
PC3. Learning to build models on datasets	-	-	-	-
PC4. Exploring the outputs of models	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3920
NOS Name	Fundamentals of Machine learning
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3919: Data analysis and Visualization

Description

Learn to analyze, interpret, and visualize data using Python libraries to generate meaningful insights and support data-driven decision-making.

Scope

The scope covers the following :

- Learn to analyze, interpret, and visualize data using Python libraries to generate meaningful insights and support data-driven decision-making.

Elements and Performance Criteria

NIE/ITS/N14017

To be competent, the user/individual on the job must be able to:

PC1. Introduction to Pandas

PC2. Exploring Data Frames and Series

PC3. Learning EDA and Data Analysis

PC4. Performing Analysis on datasets

PC5. Introduction to Visualisation and Learning Tools for making Graphs and plots

PC6. Exploring analysis through visualization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14017	**-**	**100**	**-**	**-**
PC1. Introduction to Pandas	-	-	-	-
PC2. Exploring Data Frames and Series	-	-	-	-
PC3. Learning EDA and Data Analysis	-	-	-	-
PC4. Performing Analysis on datasets	-	-	-	-
PC5. Introduction to Visualisation and Learning Tools for making Graphs and plots	-	-	-	-
PC6. Exploring analysis through visualization	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3919
NOS Name	Data analysis and Visualization
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Developer , Software Engineering
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3918: Data analysis and Visualization

Description

Learn to analyze, interpret, and visualize data using Python libraries to generate meaningful insights and support data-driven decision-making.

Scope

The scope covers the following :

- Learn to analyze, interpret, and visualize data using Python libraries to generate meaningful insights and support data-driven decision-making.

Elements and Performance Criteria

NIE/ITS/N14017

To be competent, the user/individual on the job must be able to:

PC1. Introduction to Pandas

PC2. Exploring Data Frames and Series

PC3. Learning EDA and Data Analysis

PC4. Performing Analysis on datasets

PC5. Introduction to Visualisation and Learning Tools for making Graphs and plots

PC6. Exploring analysis through visualization

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14017	**100**	**-**	**-**	**-**
PC1. Introduction to Pandas	-	-	-	-
PC2. Exploring Data Frames and Series	-	-	-	-
PC3. Learning EDA and Data Analysis	-	-	-	-
PC4. Performing Analysis on datasets	-	-	-	-
PC5. Introduction to Visualisation and Learning Tools for making Graphs and plots	-	-	-	-
PC6. Exploring analysis through visualization	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3918
NOS Name	Data analysis and Visualization
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Developer , Software Engineering
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3917: Conceptualizing Data Science with python

Description

Understand the fundamentals of data science using Python, including data analysis, visualization, and basic machine learning concepts.

Scope

The scope covers the following :

- Understand the fundamentals of data science using Python, including data analysis, visualization, and basic machine learning concepts.

Elements and Performance Criteria

NIE/ITS/N14016

To be competent, the user/individual on the job must be able to:

PC1. Concept of Data Science and tools used

PC2. Pre- Processing Concepts in Data Science

PC3. Introduction to Numpy and Working on N-d arrays

PC4. Learning Analysis on Numpy

PC5. Exploring Image handling using Numpy

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14016	**-**	**100**	**-**	**-**
PC1. Concept of Data Science and tools used	-	-	-	-
PC2. Pre- Processing Concepts in Data Science	-	-	-	-
PC3. Introduction to Numpy and Working on N-d arrays	-	-	-	-
PC4. Learning Analysis on Numpy	-	-	-	-
PC5. Exploring Image handling using Numpy	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3917
NOS Name	Conceptualizing Data Science with python
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3916: Conceptualizing Data Science with Python

Description

Understand the fundamentals of data science using Python, including data analysis, visualization, and basic machine learning concepts.

Scope

The scope covers the following :

- Understand the fundamentals of data science using Python, including data analysis, visualization, and basic machine learning concepts.

Elements and Performance Criteria

NIE/ITS/N14016

To be competent, the user/individual on the job must be able to:

PC1. Concept of Data Science and tools used

PC2. Pre- Processing Concepts in Data Science

PC3. Introduction to Numpy and Working on N-d arrays

PC4. Learning Analysis on Numpy

PC5. Exploring Image handling using Numpy

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14016	**100**	**-**	**-**	**-**
PC1. Concept of Data Science and tools used	-	-	-	-
PC2. Pre- Processing Concepts in Data Science	-	-	-	-
PC3. Introduction to Numpy and Working on N-d arrays	-	-	-	-
PC4. Learning Analysis on Numpy	-	-	-	-
PC5. Exploring Image handling using Numpy	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3916
NOS Name	Conceptualizing Data Science with Python
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3913: Employability Skill 07

Description

This NOS unit is about carrying out operations about learners applying basic and advanced Employability Skills concepts in real life situations to become a successful 21st century professional

Scope

The scope covers the following :

- The scope covers the following:
- plan and prepare advance employability skills activities carry out the work to plan and prepare the learners to build key knowledge and skills for career
- development in the 21st century using advanced employability skills documenting the record

Elements and Performance Criteria

MSME/ES/01 Employability Skill

To be competent, the user/individual on the job must be able to:

PC1. Explain the major applications of MS Office

PC2. Explain the different types of e-commerce

PC3. List the benefits of e-commerce for retailers and customers

PC4. • Discuss how the Digital India campaign will help boost e-commerce
• in India

PC5. Write applications pertaining to various matters.

PC6. Explain power of positive attitude and Importance of commitment

PC7. • Explain motivation and the Ways to motivate oneself and Personal
• goal setting

PC8. Explain the Effective & Level of Communication

PC9. • Explain communication and Significance of technical
• communication?

PC10. Explain the methods of listening Skills.

PC11. Explain the differences between bio-data, CV and Resume.

PC12. Explain verbal and non-verbal Communication

PC13. Explain how to face an interview.

PC14. Explain team work, group work, team formation process

PC15. How to Minimize the team conflicts

PC16. Explain Ethics & values

PC17. • Explain the concept of entrepreneurship, and entrepreneurship v/s
• Management

PC18. • Explain the process of project report preparation for setting up a
• new business

PC19. Explain the role of various schemes and institute for selfemployment i.e. MSME, DIC, NSIC, SIDBI etc.,

PC20. Role of financial institution to support startup

PC21. Discuss the importance of saving money

PC22. Discuss the main types of bank accounts

PC23. Differentiate between fixed and variable costs

PC24. Describe the different types of insurance products

PC25. Discuss the main types of electronic funds transfers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ES/01 Employability Skill	**100**	**-**	**-**	**-**
PC1. Explain the major applications of MS Office	-	-	-	-
PC2. Explain the different types of e-commerce	-	-	-	-
PC3. List the benefits of e-commerce for retailers and customers	-	-	-	-
PC4. • Discuss how the Digital India campaign will help boost e-commerce • in India	-	-	-	-
PC5. Write applications pertaining to various matters.	-	-	-	-
PC6. Explain power of positive attitude and Importance of commitment	-	-	-	-
PC7. • Explain motivation and the Ways to motivate oneself and Personal • goal setting	-	-	-	-
PC8. Explain the Effective & Level of Communication	-	-	-	-
PC9. • Explain communication and Significance of technical • communication?	-	-	-	-
PC10. Explain the methods of listening Skills.	-	-	-	-
PC11. Explain the differences between bio-data, CV and Resume.	-	-	-	-
PC12. Explain verbal and non-verbal Communication	-	-	-	-
PC13. Explain how to face an interview.	-	-	-	-
PC14. Explain team work, group work, team formation process	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. How to Minimize the team conflicts	-	-	-	-
PC16. Explain Ethics & values	-	-	-	-
PC17. • Explain the concept of entrepreneurship, and entrepreneurship v/s • Management	-	-	-	-
PC18. • Explain the process of project report preparation for setting up a • new business	-	-	-	-
PC19. Explain the role of various schemes and institute for selfemployment i.e. MSME, DIC, NSIC, SIDBI etc.,	-	-	-	-
PC20. Role of financial institution to support startup	-	-	-	-
PC21. Discuss the importance of saving money	-	-	-	-
PC22. Discuss the main types of bank accounts	-	-	-	-
PC23. Differentiate between fixed and variable costs	-	-	-	-
PC24. Describe the different types of insurance products	-	-	-	-
PC25. Discuss the main types of electronic funds transfers	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3913
NOS Name	Employability Skill 07
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

Qualification Pack

MSME/SSC/N3915: Programming with Python

Description

Develop the knowledge and skills to write Python programs using variables, data types, operators, loops, functions, file handling, and object-oriented programming to solve real-world problems.

Scope

The scope covers the following :

- Develop the knowledge and skills to write Python programs using variables, data types, operators, loops, functions, file handling, and object-oriented programming to solve real-world problems.

Elements and Performance Criteria

NIE/ITS/N14015

To be competent, the user/individual on the job must be able to:

PC1. Installing and configuring programming environment for python

PC2. • Writing basic programs and understanding datatypes, operators, looping
• constructs, functions

PC3. Exploring various data structures

PC4. Learn to work on modules and packages

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14015	-	100	-	-
PC1. Installing and configuring programming environment for python	-	-	-	-
PC2. • Writing basic programs and understanding datatypes, operators, looping • constructs, functions	-	-	-	-
PC3. Exploring various data structures	-	-	-	-
PC4. Learn to work on modules and packages	-	-	-	-
NOS Total	-	100	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3915
NOS Name	Programming with Python
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

MSME/SSC/N3914: Programming with Python

Description

Develop the knowledge and skills to write Python programs using variables, data types, operators, loops, functions, file handling, and object-oriented programming to solve real-world problems.

Scope

The scope covers the following :

- Develop the knowledge and skills to write Python programs using variables, data types, operators, loops, functions, file handling, and object-oriented programming to solve real-world problems.

Elements and Performance Criteria

NIE/ITS/N14015

To be competent, the user/individual on the job must be able to:

PC1. Installing and configuring programming environment for python

PC2. • Writing basic programs and understanding datatypes, operators, looping
• constructs, functions

PC3. Exploring various data structures

PC4. Learn to work on modules and packages

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NIE/ITS/N14015	**100**	**-**	**-**	**-**
PC1. Installing and configuring programming environment for python	-	-	-	-
PC2. • Writing basic programs and understanding datatypes, operators, looping • constructs, functions	-	-	-	-
PC3. Exploring various data structures	-	-	-	-
PC4. Learn to work on modules and packages	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/SSC/N3914
NOS Name	Programming with Python
Sector	IT-ITeS
Sub-Sector	
Occupation	Software Developer , Software Engineering, Software Developer
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	29/07/2023
Next Review Date	29/07/2028
NSQC Clearance Date	29/07/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

as per qp

Minimum Aggregate Passing % at QP Level : 40

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Minimum Passing % at NOS Level: 40

(**Please note**: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MSME/SSC/N3925.Fundamentals of Deep learning	-	100	-	-	100	8
MSME/SSC/N3924.Fundamentals of Deep learning	100	-	-	-	100	8
MSME/SSC/N3923.Performance and Accuracy of Machine learning models	-	100	-	-	100	8
MSME/SSC/N3922.Performance and Accuracy ofMachine Learning models	100	-	-	-	100	8
MSME/SSC/N3921.Fundamentals of Machine learning	-	100	-	-	100	8
MSME/SSC/N3920.Fundamentals of Machine learning	100	-	-	-	100	8
MSME/SSC/N3919.Data analysis and Visualization	-	100	-	-	100	8
MSME/SSC/N3918.Data analysis and Visualization	100	-	-	-	100	8
MSME/SSC/N3917.Conceptualizing Data Science with python	-	100	-	-	100	8
MSME/SSC/N3916.Conceptualizing Data Science with Python	100	-	-	-	100	7
MSME/SSC/N3913.Employability Skill 07	100	-	-	-	100	7
MSME/SSC/N3915.Programming with Python	-	100	-	-	100	7
MSME/SSC/N3914.Programming with Python	100	-	-	-	100	7
Total	**700**	**600**	**-**	**-**	**1300**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.