CCEK – NSQF ALIGNED PROGRAM

COURSE SYLLABUS

FOR

AI Foundation

CCEK - NATIONAL SKILL DEVELOPMENT TRAINING PROGRAM

AI Foundation

CCEK – NSDC course package covers the following Qualification Packs and leads to the following NSDC certifications. The students who successfully completed the course programs are entitled to get NSDC certification after undergoing the assessment process of NSDC as per the rules and regulations stipulated by NSDC from time to time.

SL. NO.	QUALIFICATIONS PACK	QUALIFICATIONS PACK CODE	NSQF LEVEL
1	**AI Foundation** **Brief Job Description**: AI Foundation is aimed at upskilling individuals with awareness of AI and helping them expand their knowledge and learn the fundamentals of AI at a foundation level.	**SSC/N8148**	**4.5**

COURSE DETAILS

AI Foundation

EXAMINATION DETAILS

COURSE NAME	COURSE CODE	ELIGIBILITY	DURATION
AI Foundation	G49	Pursuing 1st year of 3-year/ 4-years UG	45

SL. NO.	EXAM	EXAM CODE	MAXIMUM MARK	INTERNAL	TOTAL MARK
THEORY PAPERS					
1	Fundamentals of statistics	T001	100	50	150
PRACTICAL PAPERS					
1	popular database tools	L001	100	50	150
TOTAL MARKS					
1	Total Examination Marks (Theory Online + Practical Examination)				200
2	Total Internal Marks				100
3	**Total Marks (Total Internal Marks + Total Examination Marks)**				**300**

AI Foundation

INTERNAL MARK CRITERIA FOR EACH

SL NO.	MODULE	MODULE CODE	MAXIMUM MARK	INTERNAL MARK	TOTAL MARK
1	Fundamentals of statistics	T001	100	50	150
2	popular database tools	L001	100	50	150
	TOTAL		200	100	300

ATTENDANCE	GENERAL PERFORMANCE	INTERNAL EXAMINATIONS/ PROJECTS/ ASSIGNMENTS	TOTAL MARKS
5	5	40	50

COURSE SYLLABUS

FOR

AI Foundation

COURSE	AI Foundation	
TOTAL MARKS	Mark: 300	Internal Mark: 100
TOTAL HOURS	45 Hrs	

DEFENITION OF CREDIT

1 Credit	15Hrs Theory/ 30Hrs Practical
Skill Components	60 – 70 % of Total Credit

MODULES INCLUDED IN THIS SUBJECT

SL NO	MODULE NAME	CREDIT BREAKUP
1	Module 1: Introduction to AI	**1.5**
2	Module 2: Refresher to programming	
3	Module 3: Fundamentals of statistics	
4	Module 4: Fundamentals of LLM	
5	Module 5: Ethics in AI	
	Total	**1.5**

Training Outcomes

- Appreciate the potential of AI in transforming businesses and customer use cases
- Get an overview of databases
- Get an overview of LLM (Large Language Models ,Prompt engineering,Neural Networks
- Evaluate the fundamentals of databases, Object-Oriented Programming and data structures
- Create basic algorithms and write simple programs in Python or R
- Obtain basic knowledge and skills that an individual must possess to understand the mathematical aspects of AI and data science
- Ethics in AI

MODULES

Module 1: Introduction to AI

THEORY

- Explain what is AI (narrow, general, and super AI) and its different types.
- Describe different use cases of AI across industry verticals.
- Define common da
- ta science terminologies.
- Describe machine learning and its types (Supervsied,unsupervised learning, reinforced learning etc.) & Machine learning models (Regression,logistic,decision trees,neural networks etc.)
- Discuss about the neural networks (CNN, RNN etc. & its layers)
- Discuss the LLMs (large language models) and their capabilities.

Module 2: Refresher to programming

THEORY

- Discuss the fundamentals of databases including topics such as relational databases, tables and data types
- Explain the basics of data structures: abstract data types, mathematical properties of sequences, special types of sequences (stacks, queues, strings), implementation of sequence type (arrays, linked lists), trees, sets and maps, and graphs.
- Discuss standard template libraries
- Explain the structure of essential algorithms, sorting and searching algorithms, numerical algorithms, string algorithms, geometric algorithms, graph algorithms

PRACTICAL

- Explore various features of popular database tools
- Demonstrate how to implement stacks, queues, lists, trees, and graphs using the OOP paradigm
- Demonstrate how to map abstract data types to STL (Standard template library) of different programming languages
- Demonstrate how to develop essential algorithms, sorting and searching algorithms, numerical algorithms, string algorithms, geometric algorithms, graph algorithms
- Demonstrate the applications of Python, basic data types, expressions and variables, conditional statements, loops and iterations, functions, debugging

Module 3: Fundamentals of statistics

THEORY

- Explain basic concepts of descriptive statistics and analytical techniques: measures of central tendency (mean, median, mode), measures of central dispersion (range, interquartile range, variance, standard deviation), statistical anomalies and regressions
- Discuss the fundamentals of different forms of graphs
- Evaluate the characteristics and uses of various popular tools used for data science and visualisations

PRACTICAL

- Generate simple data visualisations and graph types, popular dashboards, and characteristics of easy-to-consume visualisations
- Create graph types such as pie charts, line graphs, scatter graphs, bar charts, column graphs, ring plots, etc.
- Explore essential features of popular tools used such as Tableau, QlikView, d3js, ggplot, Bokeh, Plotly, Pygal, Altair, Geoplotlib

Module 4: Fundamentals of LLM

THEORY

- Explain about LLMs with examples
- Explain the transformaer architecture upon which the LLMs are built
- Discss about the pre training and transfer learning
- Discuss about tokenization
- Elaborate LLM fine tuning strategies
- Discuss the evalution metrics for LLMs (BLEU,ROUGE scores)
- Define Prompts their usage

PRACTICAL

- Demonstrate the various LLMs, conduct task such as text generation, language translation, question answering etc.
- Design Prmpts to generate the specific output from the LLMs

Module 5: Ethics in AI

THEORY

- Explain fairness and bias
- Discuss about privacy and data protection
- Explain the socital impact of AI