CCEK – NSQF ALIGNED PROGRAM

COURSE SYLLABUS

FOR

AI-Business Analyst

CCEK - NATIONAL SKILL DEVELOPMENT TRAINING PROGRAM

AI-Business Analyst

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	**<u>AI-Business Analyst</u>** **Brief Job Description**: Individuals at this job are responsible for understanding business requirements and assisting in developing AI-based solutions to a given problem statement. They act as a bridge between the client and the technical/ solution development team. They should possess both business skills and technical knowledge, especially related to AI applications in the domain/ business vertical.	**SSC/N8121**	**5.5**

COURSE DETAILS

AI-Business Analyst

EXAMINATION DETAILS

COURSE NAME	COURSE CODE	ELIGIBILITY	DURATION
AI-Business Analyst	G50	Pursuing 3rd year of 3-year/ 4-years UG	420

SL. NO.	EXAM	EXAM CODE	MAXIMUM MARK	INTERNAL	TOTAL MARK
	THEORY PAPERS				
1	Foundations of Business Analysis	T001	100	50	150
	PRACTICAL PAPERS				
1	Data Collection and Preprocessing Lab	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-Business Analyst

INTERNAL MARK CRITERIA FOR EACH

SL NO.	MODULE	MODULE CODE	MAXIMUM MARK	INTERNAL MARK	TOTAL MARK
1	Foundations of Business Analysis	T001	100	50	150
2	Data Collection and Preprocessing Lab	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-Business Analyst

COURSE	AI-Business Analyst	
TOTAL MARKS	Mark: 300	Internal Mark: 100
TOTAL HOURS	420 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: Overview of AI	0.5
2	Module 2: Understand business goals	0.5
3	Module 3: Requirement Gathering	0.5
4	Module 4: Data Analysis and Modelling	1
5	Module 5: Solution Design	1
6	Module 6: Evaluation and Testing	1.5
7	Module 7: Implementation Support	0.5
8	Module 8: Monitoring and optimization	0.5
9	Module 9: Continuous Learning and Improvement	0.5
10	Module 10: Ethical Concerns	0.5
11	Module 11: Inclusive and environmentally sustainable workplaces	0.5

12	Module 12: Introduction to Employability Skills	**0.5**
13	Module 13: Constitutional Values - Citizenship	**1**
14	Module 14: Becoming a Professional in the 21st Century	**0.5**
15	Module 15: Basic English Skills	**0.5**
16	Module 16: Career Development & Goal Setting	**0.5**
17	Module 17: Communication Skills	**0.5**
18	Module 18: Diversity & Inclusion	**0.5**
19	Module 19: Financial and Legal Literacy	**0.5**
20	Module 20: Essential Digital Skills	**0.5**
21	Module 21: Entrepreneurship	**0.5**
22	Module 22: Customer Service	**0.5**
23	Module 23: Getting Ready for Apprenticeship and Jobs	**0.5**
	Total	**14**

Training Outcomes

- Understand and collaborate with business stakeholders to gather and document requirements for AI-driven projects and initiatives.
- Understand the change management process related to requirement gathering.
- Analyze and interpret data to extract actionable insights and identify opportunities for AI integration.
- Work with businesses to define data privacy, data management, and monitoring processes.
- Work with data scientists and developers to design AI and machine learning solutions that align with business goals.
- Work with the Project Manager to Manage and oversee AI projects from conception to implementation, ensuring timely delivery and meeting project objectives.
- Establish and enforce data governance best practices to ensure data quality and compliance with regulations.
- Identify inefficiencies in current business processes and propose AI-driven improvements.
- Communicate project progress and findings to stakeholders, including non-technical team members.
- Conduct testing and validation of AI models to ensure accuracy and reliability.
- Stay updated with industry trends and advancements in AI and data analytics to suggest innovative solutions.
- Ethics in AI

MODULES

Module 1: Overview of AI

THEORY

- Describe Artificial intelligence and its various types (Weak AI, Artificial Narrow Intelligence, Artificial General Intelligence, reactive machines etc.)
- Explain Gen-AI & its capabilities in language, vision, and audio generation.
- Describe the real-world applications and use cases in different sectors and industries.
- Discuss various technical terms used in Gen-AI for e.g., Prompt, GANs, LLMs, supervised- unsupervised and deep learning etc.
- Explain the advantages, risks, and concerns of Gen-AI
- Discuss various technical terms used in Gen-AI for e.g., Neural networks, Prompts, GANs, LLMs, VAE, supervised-unsupervised and deep learning etc.
- Describe the neural networks and how neural network identifies the patterns and structures within existing data to generate new and original content.
- Explain different learning approaches for e.g., unsupervised, or semi-supervised learning for model training.
- Learn about pre-trained models and platforms for AI application development.
- Explain the parameters of a successful generative AI Model, e.g., diversity of content, speed of response, quality of content.
- Describe the ethical concerns associated with generative AI.
- Describe the potential limitations, risks, and misuses of generative AI.
- Explain the considerations for the responsible use of generative AI.

Module 2: Understand business goals

THEORY

- Discuss the broad business objectives or goals in a sample organisation.
- Elaborate about different business processes in the organization and understand the KPIs of the organization.
- Discuss about the common pain points of the organization and the remedial measures.

PRACTICAL

- Develop KPI metrics for a sample organization. The metrics may include accuracy, precision, recall, throughput, latency, resource utilization, user satisfaction etc.
- Complete a case study discussion on the industrial challenges in AI

Module 3: Requirement Gathering

THEORY

- Discuss different type of business process in an organization for example sales, marketing, customer support, production etc.
- Elaborate about the kind of data generated from different business processes.
- Discuss high level interconnection of all the process and where the AI Solution can be implemented.
- Discuss with an example, how the business requirement is translated into functional specifications for an AI powered solution
- Understand the change management process related to requirement gathering

PRACTICAL

- Demonstrate a use case of requirement gathering and showcase how the business requirement is translated into a functional specification for a AI powered solution For e.g. AI Powered Fraud Detection System, where business requirements are gathered by stakeholder workshops and data exploration.
- The Functional Specifications will be data preprocessing, feature engineering, model development, real time scoring engine and integration of fraud management system.

Module 4: Data Analysis and Modelling

THEORY

- Elaborate about the different types of datasets.
- Process and clean the dataset from different business process.
- Elicit pattern and insights in data applying statistics and ML algorithms for example visualization, correlation, regression, time series, cluster analysis, text mining, FP Growth algorithm etc.

PRACTICAL

- Demonstrate data analysis for improvement of a power plant efficiency or any other industry use case.
- Elicit insights from the data obtained for example understand about the feature engineering of power plant,
- Select and check different ML Models for efficiency improvement for e.g. regression models to predict boiler efficiency

Module 5: Solution Design

THEORY

- Discuss how to select appropriate algorithm for developing the AI solution based on the different characteristics of algorithms for example, learning paradigm, functionality, Complexity, interpretability, scalability, adaptability, bias etc.
- Define system architecture and design user interface as per the requirement

PRACTICAL

- Demonstrate a solution development for a supply chain optimization or any other use case.
- Steps for Solution design Supply Chain Optimization

  ➢ Apply ML algorithms such as reinforcement learning or optimization algorithms to make data- driven decisions.
  ➢ Analyze historical data on inventory levels, demand forecasts, supplier performance,& transportation routes.
  ➢ Develop predictive models to anticipate future demand fluctuations and supply chain disruptions.
  ➢ Implement AI-driven recommendation systems to optimize inventory replenishment, warehouse allocation, and delivery scheduling.

Module 6: Evaluation and Testing

THEORY

- Discuss evaluation metrics that align with the objectives of the AI solution, the metrics include accuracy, precision, recall, F1 score, mean absolute error, mean squared error, or other domain-specific metrics etc.
- Explain the process of UAT, Performance test and validation against success criteria

PRACTICAL

- Demonstrate the testing of an AI Solution for the use cases discussed in the last Modules.

Module 7: Implementation Support

THEORY

- Describe the principles of stakeholder relationship management.
- Explain ways to collaborate with various stakeholders and manage a wide range of situations.
- Explain ways to improve one-on-one communication and build rapport with

various stakeholders.
- Explain conflict resolution techniques.
- Describe the fundamentals of negotiations such as negotiating positions, BATNA (Best Alternative to a Negotiated Agreement) and integrative and distributive negotiations.

PRACTICAL

- Apply the principles of stakeholder relationship management to collaborate with various stakeholders.
- Demonstrate the ways to understand stakeholder needs and manage expectations effectively.
- Apply effective persuasion and negotiation techniques to deal with challenging behaviours.
- Apply strategies to gain stakeholder cooperation and support for project success.
- Apply conflict resolution techniques to handle difficult situations.

Module 8 : Monitoring and optimization

THEORY

- Discuss the KPIs discussed in Module 1
- Explain about the monitoring and optimizations infrastructure which includes software stack, networking, computing resources etc.
- Discuss various techniques to optimize the infrastructure, it may include the following:
  - ➢ Resource scaling: Automated scaling adjusts resources based on workload demands.
  - ➢ Containerisation & Orchestration: use Docker & Kubernetes to package &deploy AI components efficiently. Containers ensure consistency and simplify deployment and scaling.
  - ➢ Performance Tuning: It may include optimizing hyperparameters, adjusting batch sizes, or tuning algorithm configurations.

PRACTICAL

- Demonstrate the monitoring and optimization of the AI Solution.
- Use resource scaling, Containerization, tuning etc. to optimize the solution

Module 9: Continuous Learning and Improvement

THEORY

- Explain various ways to keep updated about the industry best practices and latest developments.
- Discuss about responsible AI, ethical considerations, edge AI

Module 10: Ethical Concerns

THEORY

- Describe the ethical concerns associated with AI.
- Explain the considerations for the responsible use of AI.
- Explain about privacy and data protection.
- Discuss bias in AI.
- Discuss about security and malicious uses of AI

Module 11: Inclusive and environmentally sustainable workplaces

THEORY

- Describe different approaches for efficient energy resource utilisation and waste management
- Describe the importance of following the diversity policies
- Identify stereotypes and prejudices associated with people with disabilities and the negative consequences of prejudice and stereotypes
- Discuss the importance of promoting, sharing and implementing gender equality and PwD sensitivity guidelines at organization level

PRACTICAL

- Practice the segregation of recyclable, non-recyclable and hazardous waste generated
- Demonstrate different methods of energy resource use optimization and conservation
- Demonstrate essential communication methods in line with gender inclusiveness and PwD sensitivity

Module 12 : Introduction to Employability Skills

THEORY

- Discuss the Employability Skills required for jobs in various industries
- List different learning and employability related GOI and private portals and their usage

Module 13: Constitutional values - Citizenship

THEORY

- Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
- Show how to practice different environmentally sustainable practices

Module 14: Becoming a Professional in the 21st Century

THEORY

- Discuss importance of relevant 21st century skills.
- Exhibit 21st century skills like Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
- Describe the benefits of continuous learning

Module 15: Basic English Skills

THEORY

- Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
- Read and interpret text written in basic English
- Write a short note/paragraph / letter/e -mail using basic English

Module 16: Career Development and Goal Setting

THEORY

- Create a career development plan with well-defined short- and long-term goals

Module 17: Communication skills

THEORY

- Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
- Explain the importance of active listening for effective communication
- Discuss the significance of working collaboratively with others in a team

Module 18: Diversity and Inclusion

THEORY

- Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
- Discuss the significance of escalating sexual harassment issues as per POSH

Module 19: Financial and Digital Literacy

THEORY

- Outline the importance of selecting the right financial institution, product, and service
- Demonstrate how to carry out offline and online financial transactions, safely and securely

Module 20: Essential Digital Skills

THEORY

- Describe the role of digital technology in today's life
- Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
- Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely
- Create sample word documents, excel sheets and presentations using basic features
- utilize virtual collaboration tools to work effectively

Module 21: Entrepreneurship

THEORY

- Explain the types of entrepreneurship and enterprises
- Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
- Create a sample business plan, for the selected business opportunity

Module 22: Customer Service Map

THEORY

- Describe the significance of analysing different types and needs of customers
- Explain the significance of identifying customer needs and responding to them in a professional manner.
- Discuss the significance of maintaining hygiene and dressing appropriately

Module 23: Getting Ready for Apprenticeship and Jobs

THEORY

- Create a professional Curriculum Vitae (CV)
- Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
- Discuss the significance of maintaining hygiene and confidence during an interview
- Perform a mock interview
- List the steps for searching and registering for apprenticeship opportunities