CCEK – NSQF ALIGNED PROGRAM

COURSE SYLLABUS

FOR

AR VR Developer

CCEK - NATIONAL SKILL DEVELOPMENT TRAINING PROGRAM

AR VR Developer

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	**AR/VR Support Analyst** **Brief Job Description**: Individuals at this job are responsible for maintaining critical support services to ensure consistent and reliable services. They are also in charge of documenting product usability patterns and creating training modules and manuals of various features and accessories of the solution. They will need to inculcate strong work ethic, maintain a healthy working environment, and provide data and information in standard formats.	**SSC/Q8808**	**5**

COURSE DETAILS

AR VR Developer

EXAMINATION DETAILS

COURSE NAME	COURSE CODE	ELIGIBILITY	DURATION
AR VR Developer	G08	Completed 2nd year diploma after 12th	480

SL. NO.	EXAM	EXAM CODE	MAXIMUM MARK	INTERNAL	TOTAL MARK
THEORY PAPERS					
1	AR/VR Hardware and Software Tools	T001	100	50	150
2	Design Patterns and Development Frameworks	T002	100	50	150
PRACTICAL PAPERS					
1	AR/VR Application Development Lab	L001	100	50	150
TOTAL MARKS					
1	Total Examination Marks (Theory Online + Practical Examination)				300
2	Total Internal Marks				150
3	**Total Marks (Total Internal Marks + Total Examination Marks)**				**450**

AR VR Developer

INTERNAL MARK CRITERIA FOR EACH

SL NO.	MODULE	MODULE CODE	MAXIMUM MARK	INTERNAL MARK	TOTAL MARK
1	AR/VR Hardware and Software Tools	T001	100	50	150
2	Design Patterns and Development Frameworks	T002	100	50	150
3	AR/VR Application Development Lab	L001	100	50	150
	TOTAL		300	150	450

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

COURSE SYLLABUS

FOR

AR VR Developer

CENTRE FOR CONTINUING EDUCATION KERALA

COURSE	AR VR Developer	
TOTAL MARKS	Mark: 450	Internal Mark: 150
TOTAL HOURS	480 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: AR/VR - An Introduction	2
2	Module 2: Fundamental Concepts in AR/VR	3
3	Module 3: Fundamentals of AR/VR Development & Testing	2
4	Module 4: AR/VR Solutions: Technical Support & Administration	1
5	Module 5: Inclusive, and Environmentally Sustainable Workplace	2
6	Module 6: Introduction to Employability Skills	
7	Module 7: Constitutional Values - Citizenship	
8	Module 8: Becoming a Professional in the 21st Century	3
9	Module 9: Basic English Skills	
10	Module 10: Career Development & Goal Setting	
11	Module 11: Communication Skills	
12	Module 12: Diversity & Inclusion	3
13	Module 13: Financial and Digital Literacy	

14	Module 14: Essential Digital Skills	
15	Module 15: Entrepreneurship	
16	Module 16: Customer Service	
17	Module 17: Getting ready for Apprenticeship & jobs	
	Total	**16**

Training Outcomes

- Describe various immersive technologies and the use cases of AR/VR.
- Explain the fundamental concepts, tools, and techniques underlying AR/VR.
- Describe the tools, techniques and concepts pertaining to the development of AR/VR products or solution.
- Perform support activities such as troubleshooting, day-to-day support, usability analysis, creating technical documents, etc.
- Develop strong relationships at the workplace through effective communication and conflict management.
- Apply different approaches to maintain work ethic and demonstrate professional conduct.
- Identify best practices to maintain an inclusive, and environmentally sustainable workplace.

MODULES

Module 1: AR/VR - An Introduction

THEORY

- Describe various immersive experiences such as Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality.
- Outline the difference between AR and VR.
- Discuss and track the latest trends in AR/VR technology.
- List the possible impacts of AR/VR on businesses and society.
- Discuss existing AR/VR use cases and applications across industry verticals.
- List prospective AR/VR use cases and applications within your area of expertise.
- Outline the best practices, regulations, and standards governing the AR/VR environment in the industry, region, and organization.
- Outline technological and ecological limitations and impact of the AR and VR media.

PRACTICAL

- Demonstrate sample product/solutions containing various use cases of AR/VR experiences.
- Explore basic features of various AR/VR products and platforms available in the market to choose the right mix of hardware and software needed for various use cases for AR/VR.

Module 2: Fundamental Concepts in AR/VR

THEORY

- Discuss the inception and historical evolution of XR (Extended Reality) technologies.
- Discuss the basic concepts, key terms, psychological aspects as well as ethical boundaries involved in AR and VR technologies.
- Describe the principles of AR/VR technologies including optics, displays, orientation, stereopsis, tracking, and hardware.
- Study the democratization of AR and VR technologies through new-age digital trends.
- Explain various components of AR/VR application development such as common enabling technologies, digital assets, 3D libraries, AR SDKs, VR devices, etc.
- List the present in-demand AR and VR frameworks, mainstream tools, and platforms.

PRACTICAL

- Demonstrate how to interact in a VR world.
- Apply suitable techniques to view, inspect, and gain basic understanding of platform interfaces.
- Apply suitable tools and platforms to explore the basics of 3D graphics, modeling, and the orchestration of different digital objects in a virtual environment.

Module 3: Fundamentals of AR/VR Development & Testing

THEORY

- Examine various workflows, tools and processes used for designing and 3D graphics and real-time rendering of VR and mobile AR.
- Explain basic mathematical concepts and processes that are used in 3D graphics and programming.
- Discuss general principles of computing, object-oriented programming, tools and processes for visual scripting and basic programming that are used in XR development and testing.
- Describe various frameworks, automation tools, version control and configuration management systems that are used in the software development and testing domain.
- Explain methods of debugging, troubleshooting, code optimisation and refactoring based on product/solution performance.

PRACTICAL

- Demonstrate the basic methods and techniques of Human Computer Interaction (HCI) and User Experience (UX) design using suitable tools/ platforms.
- Perform AR/VR programming and visual scripting using suitable tools.
- Demonstrate the processes for rapid prototyping and application development.
- Carry out various types of testing methodologies such as unit testing, integration testing, system testing, and acceptance testing.
- Apply suitable methods to track performance-related issues to take corrective actions and optimize VR/AR product/solution.
- Apply ethical principles and practices pertaining to the field of XR development.

Module 4: AR/VR Solutions: Technical Support & Administration

THEORY

- Describe the activities to be performed as part of AR/VR support.
- List important aspects to be included while defining a plan for support (e.g., type of support and internal resource allocation).
- Describe the parameters to be tested as part of supporting an AR/VR product/solution.
- Outline the procedure for the overall technical management of AR/VR hardware and platforms including audio, video, compute, AR/VR headsets, accessories, and applications.
- Examine the impact of monitoring results and accordingly validate software and hardware components against their specifications.
- Describe the methods and processes for system monitoring, solution deployment and troubleshooting in sample AR/VR solutions.
- List the tools and platforms to test, monitor and deploy AR/VR solutions and hardware.
- Examine hardware and software platform interoperability in sample AR/VR solutions across multiple interfaces like mobile and desktop.
- Study different frameworks to enhance output optimization matching the requirements of the product/solution.

- Evaluate the utility of features and usability patterns in sample AR/VR solutions.

PRACTICAL

- Demonstrate how to diagnose issues, report defects, and troubleshoot them in sample AR/VR solutions.
- Demonstrate the procedure to ensure system readiness, execute system upgrades, and ensure compliance with prescribed guidelines.
- Perform regression tests to discover the reoccurrence of technical issues.
- Apply effective test-driven technical management frameworks that drive improvements in product/solution performance.
- Create a plan for supporting a sample AR/VR solution and carry out the activities outlined in the plan.
- Prepare the following artefacts for the sample AR/VR solution:
  - reports on solution performance
  - troubleshooting guide
  - training manuals
  - manuals, videos, and other materials that aid the users in easy navigation of the solution

Module 5: Inclusive, and Environmentally Sustainable Workplace

THEORY

- Describe different approaches for resourceful energy utilisation and waste management.
- Describe the importance of following the diversity policies.
- Identify stereotypes and prejudices associated with differently abled people and its negative consequences.
- 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 optimization and conservation.
- Demonstrate essential communication methods in line with gender inclusiveness and PwD sensitivity.

Module 6 : 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 7: 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 8: 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 9: 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 10: Career Development and Goal Setting

THEORY

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

Module 11: 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 12: 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 13: 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 14: 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 15: 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
- Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
- Create a sample business plan, for the selected business opportunity

Module 16: Customer Service

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 17: 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