AWS Cloud Practioner

COURSE OBJECTIVE:	● Fundamentals of Cloud computing: Grasp the concepts of cloud computing, including the benefits, service models, and the AWS Cloud platform. ● Acquire practical skills in AWS services: Develop hands-on skills in working with essential AWS services such as EC2, S3, RDS, IAM, and CloudFormation, enabling you to effectively utilize these services in real-world scenarios. ● Build a strong foundation in AWS security: Implement secure access control, encryption, and compliance measures in AWS, ensuring the confidentiality, integrity, and availability of cloud resources. ● Gain proficiency in cloud monitoring and troubleshooting: Master the use of AWS CloudWatch for monitoring and troubleshooting resources, enabling you to identify and resolve issues quickly to maintain optimal performance. ● Optimize costs and resource management in AWS: Exhibit techniques for optimizing costs, managing resource usage, and leveraging AWS cost management tools, enabling you make informed decisions and maximize efficiency. ● AWS certifications: Lay the groundwork for further specialization in AWS technologies by acquiring a solid foundation, setting you on the path towards pursuing advanced certifications such as AWS Certified Cloud Practitioner or Associate-level certifications.
COURSE OUTCOME:	● Design and configure networking components such as Amazon VPC, Route 53, and CloudFront. ● Enhance your capability to identify and resolve issues by utilizing AWS CloudWatch for monitoring, troubleshooting, and optimizing performance of cloud resources, ensuring you can effectively contribute in operational environments. ● Acquire a thorough understanding of AWS security best practices, access control, encryption, and compliance measures, enabling you to design and implement secure cloud infrastructures that align with industry standards. ● Perform techniques for optimizing costs, managing resource usage, and leveraging AWS cost management tools, empowering you to contribute to cost-effective and efficient cloud deployments within organizations. ● Gain practical skills in working with essential AWS services such as EC2, S3, RDS, IAM, and Cloud Formation, equipping you with hands-on expertise needed for diverse job roles in cloud computing. ● Develop a solid foundation in AWS technologies, preparing you for entry-level positions such as cloud support

	engineer, cloud operations analyst, or cloud solutions architect. This course equips you with the skills, knowledge, and practical experience necessary to excel in cloud computing environments and lays the groundwork for pursuing advanced AWS certifications.

Course Duration: 45 Hours

Course Content:

Unit 1: Introduction to Cloud Computing, AWS Global Infrastructure. Cloud Security, Networking and Content Delivery

Introduction to Cloud Computing: Overview of cloud computing concepts and benefits -Understanding cloud service models (IaaS, PaaS, SaaS)- Exploring the AWS Cloud platform and its services- AWS Global Infrastructure: Understanding AWS regions and availability zones-Exploring the concept of fault tolerance and high availability-Overview of AWS data centres and their security measures-AWS services and service categories-Activity: AWS Management Console Click Through Cloud Security: AWS shared responsibility model-Activity: AWS Shared Responsibility-Model-AWS Identity and Access Management (IAM)-Demo: AWS IAM Console-Securing a new AWS account-Lab: Introduction to AWS IAM-Securing accounts-Securing data-Working to ensure compliance Networking and Content Delivery: Networking basics-Amazon VPC-VPC networking-Activity: Label This diagram-Demo: Amazon VPC Console-VPC security-Activity: Design a VPC-Lab: Build a VPC and Launch a Web Server-Route 53-CloudFront

Unit 2: AWS Compute Services and Elasticity

Compute Services: Compute services overview-Amazon EC2 part 1-Amazon EC2 part 2-Amazon EC2 part 3-Demo: Amazon EC2-Lab: Introduction to Amazon EC2 -Activity: Amazon EC2 Versus Managed Services-Demo: Amazon EC2 Part Console-Amazon EC2 cost optimization-Container services -Introduction to AWS Lambda-Activity: AWS Lambda-Introduction to AWS Elastic Beanstalk-Activity: AWS Elastic Beanstalk Storage Services: AWS EBS- Demo: Amazon Elastic Block Store-Console- Lab: Working with EBS- AWS S3 -Demo: AWS EFS-Demo: -AWS S3 Glacier-Demo

Unit 3: Database and Application Services

Database Services: Amazon RDS-Demo: Amazon RDS Console-Lab: Build a Database Server-Amazon DynamoDB-Demo: Amazon DynamoDB-Amazon Redshift- Amazon Aurora-Activity: Database case study Cloud Architecture: AWS Well-Architected Framework design principles-Activity: AWS Well-Architected Framework Design Principles-Operational excellence- Security- Reliability- Performance efficiency- Cost optimization- Reliability & high availability- AWS Trusted Advisor-Activity: Interpret AWS Trusted Advisor Recommendations

Unit 4: Scalability, Monitoring, and Automation
Automatic Scaling and Monitoring: Elastic Load Balancing-Activity: Elastic Load Balancing-Amazon CloudWatch-Activity: Amazon CloudWatch-Amazon EC2 autoscaling-Lab: Scale & Load Balance your Architecture Cloud Economics and Billing: Fundamentals of pricing-Total cost of ownership- Activity: Simple Monthly Calculator-Delaware North case study-AWS Organizations-AWS billing and cost management-Billing Dashboards-Technical support models

Unit 5: Practical Applications and Review
Real-world case studies and practical scenarios-Hands-on activities and lab exercises-Review of key concepts and sample exam questions-Final knowledge check and assessment

Test Projects:

Use Cases

LEARNING OUTCOME	ASSESSMENT CRITERIA	USE-CASES
Design and configure networking components such as Amazon VPC, Route 53, and CloudFront.	Secure Network Design: The student demonstrates proficient use of VPCs, security groups, and NACLs to create a network with appropriate isolation and least privilege access controls. High Availability Infrastructure: The student effectively implements redundant resources and failover mechanisms across multiple availability zones using Route 53 and CloudFront for continuous service availability.	**Use Case 1:** E-commerce Website Hosting **Scenario:** Jane is an entrepreneur who runs a small online store selling handmade crafts. She wants to migrate her website to the cloud to improve scalability and reliability. Task: Design and deploy an e-commerce website on AWS, utilizing services like Amazon S3 for static content storage, Amazon EC2 for hosting the web server, Amazon RDS for database management, and Amazon CloudFront for content delivery. Implement auto-scaling and load balancing to handle traffic spikes, and use AWS IAM for secure access management. Ensure the website is secure by setting up AWS WAF and monitoring performance using CloudWatch. **Use Case 2:** Mobile App Backend Scenario: Alex is developing a mobile app for fitness tracking. He

		needs a robust backend to handle user data, real-time updates, and analytics. **Task**: Set up a scalable backend infrastructure on AWS using AWS Amplify to easily deploy backend services, Amazon Cognito for user authentication, AWS AppSync for real-time data synchronization, and Amazon DynamoDB for storing user data. Implement AWS Lambda functions for serverless operations and AWS CloudFormation for managing infrastructure as code.
Enhance your capability to identify and resolve issues by utilizing AWS CloudWatch for monitoring, troubleshooting, and optimizing performance of cloud resources, ensuring you can effectively contribute in operational environments.	The individual demonstrates the ability to design and implement a comprehensive CloudWatch monitoring strategy that aligns with operational goals. This includes selecting and configuring appropriate metrics, alarms, and dashboards to gain insights into the health and performance of cloud resources. The individual can effectively leverage CloudWatch Logs, CloudWatch Logs Insights, and other CloudWatch features to investigate and resolve operational issues. They can also use the collected data to identify optimization opportunities and implement improvements.	**Use Case 1**: Data Analytics Platform **Scenario**: Mike works for a retail company and needs to analyse large volumes of sales data to identify trends and optimize inventory. Task: Build a data analytics platform on AWS using Amazon Redshift for data warehousing, AWS Glue for data cataloguing and ETL processes, and Amazon Athena for querying data stored in Amazon S3. Set up AWS Quick Sight for data visualization and create dashboards for insights. Use AWS IAM to manage access control and ensure data security. **Use Case 2:** Disaster Recovery Solution **Scenario:** Sara manages IT operations for a mid-sized company and wants to implement a disaster recovery plan to ensure business continuity. Task: Design a disaster recovery solution using AWS services. Implement AWS Backup for automated backup processes, Amazon S3 for storing backup

		data, and AWS Elastic Disaster Recovery to replicate critical workloads. Use AWS Cloud Endure for continuous data replication and AWS Route 53 for DNS failover. Create a runbook with AWS Systems Manager to automate recovery processes.
Learn techniques for optimizing costs, managing resource usage, and leveraging AWS cost management tools, empowering you to contribute to cost-effective and efficient cloud deployments within organizations	The individual demonstrates the ability to choose and configure AWS resources in a way that optimizes costs without sacrificing performance or functionality. This includes right-sizing instances, selecting appropriate storage options, and utilizing cost-saving features like Spot Instances and Reserved Instances. The individual is skilled in using AWS cost management tools (e.g., AWS Cost Explorer, AWS Budgets, AWS Trusted Advisor) to gain insights into spending patterns, identify cost anomalies, and implement budgeting and optimization strategies.	**Use Case 1:** Machine Learning Model Deployment **Scenario:** Tom is a data scientist working on a machine learning model for predictive maintenance in manufacturing. Task: Deploy the machine learning model on AWS using Amazon Sage Maker for model training and deployment. Utilize Amazon S3 for data storage and AWS Lambda for inference operations. Set up Amazon CloudWatch to monitor model performance and use AWS Step Functions to orchestrate the end-to-end machine learning workflow. Ensure data security and compliance with AWS IAM and AWS KMS. **Use Case 2:** IOT Solution **Scenario:** Lisa is developing an IoT solution for smart home devices and needs a cloud platform to manage and analyze data from the devices. Task: Implement the IoT solution using AWS IoT Core to connect and manage IoT devices, AWS IoT Analytics for processing and analyzing device data, and Amazon Kinesis for real-time data streaming. Use AWS Lambda to process data and trigger actions, and AWS DynamoDB for storing device state information. Ensure secure communication with AWS IoT Device Defender.

Gain practical skills in working with essential AWS services such as EC2, S3, RDS, IAM, and Cloud Formation, equipping you with hands-on expertise needed for diverse job roles in cloud computing.	The individual demonstrates the ability to correctly configure and manage EC2 instances, S3 buckets, RDS databases, IAM policies, and CloudFormation templates to meet specific requirements and best practices. The individual successfully deploys, troubleshoots, and maintains a basic application architecture using the core AWS services mentioned, showcasing practical expertise in a real-world scenario.	**Use Case 1:** Devops Pipeline **Scenario:** David leads a development team and wants to automate the software development lifecycle to improve efficiency and reduce time to market. Task: Set up a CI/CD pipeline on AWS using AWS Code Pipeline to automate build, test, and deployment processes. Utilize AWS Code Build for compiling source code, running tests, and producing build artifacts. Use AWS Code Deploy for automated application deployments and AWS CloudFormation for infrastructure as code. Implement monitoring and logging with Amazon CloudWatch and AWS CloudTrail. **Use Case 2:** Serverless Web Application Scenario: Emily is developing a new web application and wants to leverage serverless architecture for cost efficiency and scalability. **Task:** Build the web application using AWS Lambda for serverless compute, Amazon API Gateway for creating RESTful APIs, and Amazon DynamoDB for a serverless NoSQL database. Store static assets in Amazon S3 and use Amazon CloudFront for content delivery. Implement authentication with Amazon Cognito and monitor application performance with Amazon CloudWatch.

Develop a solid foundation in AWS technologies, preparing you for entry-level positions such as cloud support engineer, cloud operations analyst, or cloud solutions architect. This course equips you with the skills, knowledge, and practical experience necessary to excel in cloud computing environments and lays the groundwork for pursuing advanced AWS certifications.	The candidate demonstrates a comprehensive understanding of core AWS services (EC2, S3, RDS, IAM, etc.), their interactions, and architectural best practices, including security, scalability, and cost optimization principles. The candidate effectively translates theoretical knowledge into practical solutions by deploying, managing, and troubleshooting a multi-service AWS environment, showcasing proficiency in utilizing the AWS Management Console, CLI, and potentially IaC tools like CloudFormation.	Use Case 1: Media Streaming Service Scenario: John is creating a media streaming service for educational content and needs a scalable solution to handle video uploads, storage, and streaming. Task: Set up the media streaming service using AWS Elemental Media Services for video processing and delivery. Store video content in Amazon S3 and use Amazon CloudFront for global content delivery. Implement user authentication with Amazon Cognito and use AWS Lambda for backend processing. Monitor streaming quality and user engagement with Amazon CloudWatch. Use Case 2: Healthcare Data Management Scenario: Mary works in healthcare IT and needs a secure and compliant solution for managing patient data and medical records. Task: Design a healthcare data management system on AWS using Amazon RDS for secure database management, AWS Health Lake for storing, transforming, and analysing health data, and Amazon S3 for storing medical records. Implement compliance with HIPAA regulations using AWS compliance programs and secure data with AWS KMS and AWS IAM. Set up monitoring and logging with Amazon CloudWatch and AWS CloudTrail

SL.NO	FINAL PROJECT
1	Stock Trading Web Apps
2	Banking Management System
3	Video Course Application (Coursera)
4	Cab Booking Application
5	Music streaming application
6	Darshan Ease
7	Freelancing application
8	ShopEZ: One-Stop Shop for Online Purchases
9	Medly-Pharma Web application
10	Personal Expense Tracker Application