

Machine Learning Operations Engineer Associate (Exam AI-300)

COURSE CONTENT

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About Multisoft

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About Course

Microsoft Machine Learning Operations Engineer Associate (AI-300) Training is designed to help professionals develop the skills required to operationalize machine learning solutions using Microsoft Azure. The course covers Azure Machine Learning, MLOps practices, model deployment, CI/CD automation, monitoring, governance, responsible AI, and lifecycle management, enabling participants to build, deploy, monitor, and optimize production-ready machine learning solutions while preparing for the Microsoft AI-300 certification exam.

Module 1: Introduction to Machine Learning Operations (MLOps)

- ✓ Introduction to MLOps
- ✓ AI-300 Certification Overview
- ✓ Azure Machine Learning Overview
- ✓ MLOps Lifecycle
- ✓ Azure AI Ecosystem
- ✓ Enterprise AI Architecture

Module 2: Azure Machine Learning Workspace

- ✓ Azure Machine Learning Workspace Setup
- ✓ Compute Instances and Compute Clusters
- ✓ Workspaces and Resources
- ✓ Data Stores and Data Assets
- ✓ Environment Configuration
- ✓ Workspace Administration

Module 3: Data Preparation and Experiment Management

- ✓ Dataset Creation and Management
- ✓ Data Versioning
- ✓ Data Labeling Concepts
- ✓ Experiment Tracking
- ✓ MLflow Integration

- ✓ Data Quality Best Practices

Module 4: Model Development and Training

- ✓ Model Training Workflows
- ✓ Automated Machine Learning (AutoML)
- ✓ Custom Model Training
- ✓ Hyperparameter Tuning
- ✓ Model Evaluation
- ✓ Model Registration

Module 5: Machine Learning Pipelines

- ✓ Pipeline Fundamentals
- ✓ Pipeline Components
- ✓ Pipeline Automation
- ✓ Reusable Pipeline Design
- ✓ Pipeline Scheduling
- ✓ Pipeline Monitoring

Module 6: Model Deployment

- ✓ Deployment Strategies
- ✓ Managed Online Endpoints
- ✓ Batch Endpoints

- ✓ Containerized Deployment
- ✓ Deployment Validation
- ✓ Model Version Management

Module 7: CI/CD for Machine Learning

- ✓ Azure DevOps Integration
- ✓ GitHub Actions
- ✓ Continuous Integration
- ✓ Continuous Deployment
- ✓ Infrastructure as Code Concepts
- ✓ Release Automation

Module 8: Model Monitoring and Operations

- ✓ Model Performance Monitoring
- ✓ Data Drift Detection
- ✓ Model Drift Monitoring
- ✓ Logging and Diagnostics
- ✓ Alert Configuration
- ✓ Operational Monitoring

Module 9: Responsible AI and Governance

- ✓ Responsible AI Principles

- ✓ Explainable AI
- ✓ Fairness Assessment
- ✓ Security and Compliance
- ✓ Access Management
- ✓ AI Governance Framework

Module 10: Azure Infrastructure and Resource Management

- ✓ Compute Resource Management
- ✓ GPU and CPU Workloads
- ✓ Scaling AI Workloads
- ✓ Cost Optimization
- ✓ Resource Scheduling
- ✓ Infrastructure Monitoring

Module 11: Integration with Azure Services

- ✓ Azure Storage Integration
- ✓ Azure Key Vault
- ✓ Azure Monitor
- ✓ Azure Container Registry
- ✓ Azure Kubernetes Service (AKS)
- ✓ Integration with Azure AI Services

Module 12: Administration and Best Practices

- ✓ Workspace Administration
- ✓ Security Best Practices
- ✓ Backup and Recovery
- ✓ Performance Optimization
- ✓ Troubleshooting
- ✓ Operational Best Practices

Module 13: Real-World MLOps Projects

- ✓ End-to-End MLOps Implementation
- ✓ Enterprise AI Deployment
- ✓ CI/CD Pipeline Case Studies
- ✓ Production Model Management
- ✓ AI Operations Best Practices
- ✓ AI-300 Certification Preparation