

Oracle Cloud Infrastructure AI Foundations (2025): Hands-on Workshop

Oracle Cloud Infrastructure

DURATION

1 Days

MODULES

8 Lectures

COURSE CODE

—

Course Overview

The Oracle Cloud Infrastructure (OCI) AI Foundations course aims to introduce beginners to AI and ML, with a specific focus on their practical applications within Oracle Cloud Infrastructure. You will gain a comprehensive overview of the AI landscape, the fundamentals of deep learning, and the role of generative AI and large language models (LLMs) in modern computing. Learn about OCI Generative AI Services, Oracle 23ai Vector Database, and other OCI AI Services, such as vision, speech, language, and document understanding, using a structured approach that is both effective and engaging. After completing this course, you should be able to: Describe the fundamentals of Generative AI and LLMs Differentiate between various machine learning and deep learning architectures Explore the Oracle AI stack, including infrastructure, data, ML, and AI services Describe OCI's extensive AI tools portfolio and Generative AI services Analyze ML fundamentals, focusing on supervised and unsupervised learning techniques Examine deep learning through convolutional and sequence models such as CNNs, RNNs, and LSTMs Evaluate the capabilities and applications of Generative AI models and language frameworks Leverage OCI AI Services, OCI ML Services, OCI Generative AI, Oracle 23ai, and Oracle Select AI

What You Will Learn

Module 1: OCI AI Foundations Overview

- Employees want AI at work
- AI helps break the career ceiling
- AI is going mainstream
- For whom is this course intended?
- Course Outline
- Get Certified for FREE!
- Course Instructors
- Get the Most Out of This Course
- Get the Answers You Need
- Ratings and Feedback
- Keep Progressing: You're on Your Way to Success

Module 2: Introduction to AI

- Objectives
- What is Artificial Intelligence?
- Human Intelligence
- AI Examples
- AI Terminology
- Why do we need AI?
- AI Domains and Examples
- AI Tasks and Data
- Commonly Used AI Domains
- Language-Related AI Tasks
- Text as Data & Language AI Models
- Speech-Related AI Tasks
- Audio and Speech as Data & AI Models
- Vision-Related AI Tasks
- Images as Data & Vision AI Models
- Other AI Tasks
- AI vs. ML vs. DL: Understanding the Relationship
- Machine Learning Overview
- How Businesses Take Decisions
- Train a Model to Predict Outcomes
- Gain Insights by Clustering Data
- Deep Learning Overview
- Neural Networks
- Generative AI Introduction

Module 3: Machine Learning Foundations

- Objectives
- What is Machine Learning?
- ML Applications
- ML Model: Inputs and Outputs
- ML Model Example: Classifying Cats and Dogs
- Data Types
- Flavors of Machine Learning
- ML Examples & Limitations
- When is ML NOT the Optimal Solution?
- Supervised Learning – Classification & Regression
- Logistic Regression
- Evaluation Metrics
- Regression Line, Loss, Training a Model
- Unsupervised Learning
- Clustering, Similarity, Workflow
- Types of Clustering Algorithms
- K-Means Algorithm

- Use Cases in Unsupervised Learning

Module 4: Deep Learning Foundations

- Objectives
- Deep Learning Fundamentals
- What is Deep Learning & Why Do We Need It?
- Brief History and Types of Deep Learning Algorithms
- Artificial Neural Networks (ANNs)
- Building Blocks
- Handwritten Character Recognition Example
- Network Architecture
- Training ANNs
- Sequence Models: RNNs & LSTM
- Convolutional Neural Networks (CNNs)
- Layers Overview, Feature Extraction, Limitations
- Applications of CNNs

Module 5: Generative AI and Large Language Models (LLMs)

- Objectives
- Introduction to Generative AI
- What is Generative AI?
- How it Works
- Difference from Other AI Approaches
- Types and Applications of Generative AI Models
- Introduction to Large Language Models
- LLM Examples, Features, Model Size, Parameters
- Transformers: Part 1 & Part 2
- Encoder-Decoder Architecture, Tokens, Embeddings
- Attention Mechanism
- Transformer Model Types
- Prompt Engineering
- In-Context Learning, Few-shot Prompting, Chain-of-Thought
- Hallucination
- Customizing LLMs with Your Data
- Retrieval-Augmented Generation (RAG)
- LLM Fine-Tuning and Inference

Module 6: OCI AI Portfolio

- Objectives
- AI Services Overview
- AI for the Enterprise
- Oracle AI Stack
- Ways to Access OCI AI Services

Overview of AI Services: Language, Vision, Speech, Document Understanding, Digital Assistant

- ML Services Overview
- OCI Data Science: Principles, Features, Terminology
- AI Infrastructure Overview
- GPU Overview, Nvidia GPU Comparison
- OCI Supercluster with Blackwell and Hopper GPUs
- GPU Use Cases
- Responsible AI
- Trustworthy AI, Guiding Principles
- Ethics, Law, Human Rights
- Ethical Principles and Responsible AI Cycle
- Healthcare AI Challenges

Module 7: OCI Generative AI Service

- OCI Generative AI Introduction
- OCI Generative AI Service Overview
- How OCI Generative AI Service Works
- Pretrained Foundational Models & Fine-Tuning
- Dedicated AI Clusters
- AI Vector Search with Oracle Database 23ai
- Database-Native Vector Embedding Generation
- Vector Datatype, Distance Function, Search SQL
- Similarity Search and AI Vector Search Pipelines
- Natural Language Queries with Autonomous Database
- Select AI: Translating Language to Oracle SQL
- Developing Applications with Select AI
- SQL Query Generation Process Flow

Module 8: OCI AI Services

- Objectives
- OCI Language: Overview and Features
- OCI Speech: Overview and Console Walkthrough
- OCI Vision: Overview, Image Analysis, Console Walkthrough
- Document Understanding: OCI Vision / Document AI
- Oracle AI APIs and SDKs Overview