AI in Telecom

CONTENTS

This course explores how artificial intelligence is transforming the way modern telecom networks are operated, optimized, and protected.

It begins in the network operations center, showing how AI detects faults before they happen, suppresses alarm storms, and pinpoints root causes in seconds instead of hours. From there, it moves into the radio access network, where AI manages interference, balances load, drives beamforming, and cuts energy costs through smarter, self-optimizing decisions. You'll then go deep into the 5G core and the NWDAF analytics function, and see how AI fights real-world fraud — from SIM swap and SIM box attacks to SS7 signaling threats.

The course also covers generative AI in the operations center: how large language models, retrieval-augmented generation, and AI copilots help engineers diagnose incidents and write configurations safely. Finally, it tackles the topics most courses skip — governance, risk, the EU AI Act, accountability, and the build-versus-buy decision — and closes with a hands-on lab you can run yourself. Throughout, the focus stays practical, honest about failure modes, and grounded in real production deployments.

TARGET AUDIENCE

This course is intended for technical professionals who want a clear, practical understanding of how AI is applied inside telecom networks. It is ideal for network engineers, operations center staff, radio and core specialists, planners, and system architects involved in the design, deployment, or operation of mobile networks. It also suits team leads, technical managers, and professionals from adjacent fields — such as DevOps, security, or data — who need to understand where AI genuinely helps, where it fails, and what it takes to deploy it responsibly. No data science background is required.

LEARNING OBJECTIVES

By the end of this course, you will be able to:

- Explain how AIOps detects anomalies, suppresses alarms, and finds root causes.
- Describe key techniques like isolation forest, LSTM, and graph neural networks.
- Understand how AI optimizes the radio network and reduces energy use.
- Outline the 5G core functions and how NWDAF turns data into predictions.
- Identify major telecom fraud types and how layered AI models detect them.
- Explain how LLMs, RAG, and copilots support engineers in the operations center.
- Recognize AI risks, including hallucination, drift, and dirty data.
- Apply EU AI Act requirements for high-risk telecom AI systems.
- Use a structured framework to make build, buy, or open-source decisions.
- Run a hands-on lab covering operations, radio, fraud, and governance.

PREREQUISITES

No specific prior knowledge is required. A general technical background will be helpful, and familiarity with basic telecom, networking, or IT operations concepts may enhance understanding. You do not need any experience with machine learning or programming to follow the material or the hands-on lab.

Introduction

- AI Hype vs Reality
- Why Telecom Needs Autonomous AI

AIOps

- The 3AM Alarm Storm
- Anomaly Detection and Root Cause Analysis

- Data Readiness for AIOps

AI in RAN

- RAN Foundations and SON
- AI-Driven Radio Optimization
- Open RAN, Slicing, and Production Reality

Core Network, NWDAF & BSS Fraud

- 5G Core and NWDAF Intelligence
- Telecom Fraud Patterns and Models
- Core AI Deployments and Limits

GenAI & the NOC Copilot

- NOC Copilot Foundations
- GenAI Use Cases in Operations
- Deployment Patterns and GenAI Risks

Risk Governance – Should You Build This?

- Risk, Regulation, and Accountability
- Build, Buy, and Vendor Decisions
- Governance Failure Cases and Next Steps

Hands-On AI Telecom Lab

- Lab: AIOps Anomaly Detection
- Lab: RAN Intelligence
- Lab: Core Network and Fraud
- Lab: GenAI in Telco
- Lab: Governance