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COURSE BROCHURE

# AI Clinical Engineering Uptime Analytics Training Course

31 January – 4 February 2027
Sharm El-Sheikh

**jupiterprime.uk**

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

# AI Clinical Engineering Uptime Analytics Training Course

**Ref:** 798_30285 **Date:** 31 January – 4 February 2027 **Location:** Sharm El-Sheikh **Fees:** 5500 GBP

AI Clinical Engineering Uptime Analytics is a 1-week training course for biomedical engineers and clinical engineering managers in hospitals, who leave with a device availability forecast for one fleet of scanners, ventilators or infusion pumps. Hospitals now hold years of service tickets, error codes and machine logs, yet scanners and ventilators still fail unannounced. Jupiter Prime Training delivers this course in AI Clinical Engineering Uptime Analytics.

## Why AI Clinical Engineering Uptime Analytics Matters Now

Three pressures shape AI clinical engineering uptime analytics today. Imaging systems and connected pumps stream error codes that service contracts rarely interpret. Clinical engineering departments carry more devices per technician each year, so reactive callouts consume the time meant for planned inspection. Clinicians judge the department by whether a scanner or ventilator is free when needed. A department that reads its logs well schedules parts before a failure cancels a list. The course rests on ISO/IEC 42001 for managing AI systems and the NIST AI Risk Management Framework NIST AI RMF for judging model risk.

## Who Gains Most from AI Clinical Engineering Uptime Analytics

- Engineers who own the service history and error-code records of imaging modalities
- Specialists responsible for ventilator and infusion pump readiness
- Department leads who set inspection intervals, spares stock and loan-unit policies
- Analysts who extract computerised maintenance records and build availability reports
- Coordinators who negotiate vendor response times

A hospital clinical engineering department gains most when its imaging and life-support leads attend together.

## AI Clinical Engineering Uptime Analytics Capabilities

Participants move from scattered tickets and logs to a fleet view showing which device is drifting toward a stoppage.

- Assess the quality of service tickets, error logs and usage counters for modelling — records analyst
- Apply anomaly detection to imaging error-code streams — imaging service lead
- Calculate remaining useful life estimates for ventilators and infusion pumps — life-support lead
- Weigh model alerts against clinical scheduling and patient safety — department head
- Specify spares, loan units and vendor callouts from forecast output — service coordinator
- Communicate device availability forecasts to bed managers and radiology schedulers — clinical leadership

## Key AI Clinical Engineering Uptime Analytics Terms

- Device availability — the share of scheduled clinical time in which a medical device is ready for patient use.
- Error-code stream — time-stamped fault messages a device writes to its internal log.
- Remaining useful life — the estimated operating time before a component or device needs repair or replacement.
- Computerised maintenance management system — the database recording each device, its faults and repairs.
- Mean time between failures — the average operating time between two breakdowns of the same device type.
- Loan unit — a spare device kept or hired to cover a clinical area while its own unit is repaired.

## AI Clinical Engineering Uptime Analytics Day by Day

### Day 1: Device Fleets and Clinical Stakes

- Fleet Inventory by Clinical Criticality — Which Devices Deserve Forecasting First
- Downtime Cost to Scanning Lists and Wards — Setting the Uptime Priority
- Vendor Service Contracts and Log Access — Who Owns the Machine Data
- ISO/IEC 42001 and NIST AI RMF — Boundaries for Clinical Engineering Models
- Fault History Review in the Maintenance Database — Choosing the Pilot Fleet

### Day 2: Reading Service Records and Machine Logs

- Extracting Tickets From the Maintenance Database — Fields Needed for Modelling
- Parsing Imaging Error-Code Streams — Separating Noise From Precursor Faults
- Ventilator and Pump Event Logs — Usage Hours, Alarms and Occlusions
- Labelling Failure Modes Consistently — Trustworthy Training Data for Models
- Data Quality Scoring per Device Type — Deciding Which Fleets Are Ready

### Day 3: Forecasting Models for Medical Devices

- Anomaly Detection on Scanner Logs — Early Warning of Tube or Coil Faults
- Remaining Useful Life Models for Batteries and Valves — Replacement Timing
- Survival Curves by Device Model — Comparing Fleet Ageing Across Wards
- Alert Thresholds and False Alarm Rates — Technician Trust in Forecasts
- Model Validation Against Past Breakdowns — Evidence Before Clinical Use

### Day 4: From Forecast to Availability Decisions

- Converting Alerts Into Planned Service Slots — Protecting Radiology Lists
- Spares and Loan-Unit Sizing — Covering Intensive Care and Theatres
- Vendor Callout Triggers From Model Output — Negotiating Response Times
- Availability Dashboards for Bed Managers — Shared View of Device Readiness
- Patient Safety Checks on Automated Alerts — Human Sign-Off Before Action

## Day 5: Practising the Device Availability Forecast

- Cleaning a Sample Ventilator Log — Applying Day 2 Labelling Methods
- Fitting a Scanner Anomaly Model — Using Day 3 Validation Steps
- Planning Loan Units for a Ward Scenario — Applying Day 4 Sizing
- Peer Challenge of Alert Thresholds — Testing Clinical Acceptability
- Completing the Device Availability Forecast — Ready for Department Sign-Off

## Applying AI Clinical Engineering Uptime Analytics After the Course

- Extract a year of service tickets for one scanner model, label failure modes and score data quality.
- Run an anomaly check on one ventilator fleet's logs and present flagged units and loan cover to intensive care.

## AI Clinical Engineering Uptime Analytics Questions FAQ

### What is AI clinical engineering uptime analytics and why does it matter now?

It is the use of machine logs, service records and forecasting models to keep hospital devices available. It matters now because devices produce rich data while technician time shrinks.

### Which roles gain most from AI clinical engineering uptime analytics?

Biomedical engineers, imaging and life-support leads, maintenance records analysts and clinical engineering managers gain most, especially those responsible for scanners, ventilators or infusion pumps in busy hospitals.

### How does AI clinical engineering uptime analytics differ from a general predictive maintenance course?

It is built around hospital devices and clinical scheduling rather than plant machinery. Its cases concern scanners, ventilators, pumps and loan units.

### What do you bring back from AI clinical engineering uptime analytics training?

You bring back a device availability forecast for one real fleet, with cleaned records, a validated alert model, loan-unit cover and a schedule of planned service slots.

## AI Clinical Engineering Uptime Analytics: The Way Forward

The device availability forecast first informs which scanner or ventilator receives a planned service slot before its predicted fault. Clinical engineering managers, imaging leads and bed managers use it to agree loan cover and vendor callouts. After its first quarter in use, the false alarm rate deserves a fresh look to judge whether technicians still trust the alerts.