JUPITER PRIME
Consulting • Training • Advisory
جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Electronic Circuit Board Fault Finding and Repair Training Course

21 – 25 November 2027
Amman

Electronic Circuit Board Fault Finding and Repair Training Course

Ref: 3266_124433 **Date:** 21 – 25 November 2027 **Location:** Amman **Fees:** 4200 GBP

Electronic Circuit Board Fault Finding and Repair is a 1-week training course for electronics technicians, instrument technicians and maintenance engineers, built around one work product: a board repair record and fault history log for the equipment they support. As spare boards grow scarce, component-level repair keeps plants running. Jupiter Prime Training links electronic circuit board fault finding and repair to the way boards actually fail in service.

Why Electronic Circuit Board Fault Finding and Repair Matters Now

Three pressures shape board-level repair today. Many control cards and drive boards are no longer sold, so a failed card must be mended rather than swapped. Experienced repairers are retiring. And operations leaders expect shorter downtime with leaner spares stock. On manufacturing lines and in water treatment plants, a single failed card can halt a whole process. An organisation that diagnoses boards methodically restores equipment and learns from recurring faults. One that relies on trial-and-error swapping burns spares and sees the same failure return.

Who Gains Most from Electronic Circuit Board Fault Finding and Repair

- Bench technicians who diagnose and mend returned cards
- Instrument technicians who maintain transmitters, analysers and signal conditioning modules
- Maintenance engineers who decide whether a failed board is repaired or replaced
- Control system technicians who look after controller racks and input and output cards
- Service engineers who support drives, chargers and power conversion equipment

A maintenance department gains most when bench and field staff attend together, so field symptoms and bench findings feed one fault history.

Electronic Circuit Board Fault Finding and Repair Capabilities

Participants move from a reported symptom to the failed component and a documented repair.

- Apply a half-split fault finding sequence to a board — for technicians choosing the next probe point
- Test passive parts, diodes, transistors and regulators in and out of circuit — for repair staff deciding which component to replace
- Measure supply rails, ripple and switching waveforms with a multimeter and oscilloscope — for engineers judging power supply health
- Trace analogue and digital signals through sensor and control stages — for instrument teams isolating a faulty stage
- Carry out through-hole and surface mount rework with electrostatic discharge protection — for supervisors approving board repairs
- Build repair records that reveal repeat failures by board type — for maintenance managers planning spares and redesigns

Key Electronic Circuit Board Fault Finding and Repair Terms

- Half-split method — dividing a circuit into halves and testing the midpoint to narrow the faulty section.
- Signal tracing — following a known signal stage by stage through a circuit until it disappears or distorts.
- Supply ripple — the residual alternating component on a direct current rail, often a sign of failing capacitors.
- In-circuit testing — checking a component while it remains soldered to the board.
- Rework — removing and replacing components on a finished board without damaging pads, tracks or nearby parts.
- Electrostatic discharge — a sudden static transfer that can weaken or destroy semiconductors during handling.

Electronic Circuit Board Fault Finding and Repair Day by Day

Day 1: How Boards Work and Why They Fail

- Reading Schematics, Block Diagrams and Board Layouts — Locating Functional Stages
- Common Failure Mechanisms of Capacitors, Semiconductors and Joints — Predicting Likely Culprits
- Heat, Vibration, Moisture and Contamination Effects — Linking Environment to Damage
- Electrostatic Discharge Handling and Safe Bench Setup — Protecting Boards During Repair
- Symptom Gathering From Operators and Event Logs — Framing the Fault Before Probing

Day 2: Measurement Instruments and Component Testing

- Multimeter Voltage, Resistance and Diode Checks — Confirming Component Condition
- Oscilloscope Triggering, Probing and Grounding — Capturing Trustworthy Waveforms
- Testing Resistors, Capacitors and Inductors In Circuit — Avoiding False Readings
- Transistor, Thyristor and Regulator Checks — Separating Drivers From Loads
- Thermal Camera and Freeze Spray Techniques — Finding Intermittent Hot Spots

Day 3: Power Supplies, Sensors and Control Electronics

- Linear and Switch Mode Supply Fault Patterns — Diagnosing Dead or Unstable Rails
- Ripple and Switching Waveform Interpretation — Spotting Ageing Electrolytic Capacitors
- Sensor Interface and Signal Conditioning Stages — Isolating Measurement Errors
- Input, Output and Communication Card Diagnosis — Restoring Controller Functions
- Half-Split Sequence on Mixed Analogue and Digital Boards — Choosing the Next Test Point

Day 4: Soldering, Rework and Repair Verification

- Through-Hole Desoldering and Replacement Practice — Preserving Pads and Plated Holes
- Surface Mount Rework With Hot Air and Fine Tips — Handling Small Packages
- Track and Pad Repair Methods — Recovering Damaged Copper Safely
- Substitute Component Selection for Obsolete Parts — Matching Ratings and Footprints
- Functional Testing and Burn-In After Repair — Confirming a Lasting Fix

Day 5: Practising the Board Repair Record and Fault History Log

- Faulty Power Supply Board Exercise — Applying Day 3 Rail Diagnosis
- Intermittent Sensor Card Case — Applying Day 2 Instrument Techniques
- Rework of a Damaged Control Card — Applying Day 4 Repair Methods
- Repeat Failure Analysis by Board Type — Informing Spares and Modification Requests
- Board Repair Record and Fault History Log — Final Version and Peer Review

Applying Electronic Circuit Board Fault Finding and Repair After the Course

- Run the half-split sequence on the next three boards returned to the bench, recording each reading.
- Review twelve months of board failures by type and present the top repeat faults.

Electronic Circuit Board Fault Finding and Repair Questions FAQ

What is electronic circuit board fault finding and repair, and why does it matter now?

It is the structured diagnosis of failed boards down to component level, followed by a verified repair. It matters now because spares are often obsolete and downtime targets keep tightening.

Which roles gain most from electronic circuit board fault finding and repair training?

Bench technicians and instrument technicians gain most. Maintenance engineers benefit when deciding whether to repair or replace a card.

How does electronic circuit board fault finding and repair differ from an electronic design course?

It works on boards that already exist and have failed. Instead of choosing circuits for a new product, you locate the failed part, replace it and prove the repair lasts.

What do you bring back from electronic circuit board fault finding and repair training?

You bring back a repair record and fault log format tested on real cases. It sets out test sequences, readings and replaced parts for each board type.

Electronic Circuit Board Fault Finding and Repair: The Way Forward

The board repair record and fault history log first settles which board types are worth repairing in-house and which need redesign or new stock. Bench technicians fill it after every job and engineers read the trends. After a quarter, revisit test sequences and substitute parts against the repeat failures it reveals, in sectors from water treatment to manufacturing.