



Centre of Excellence

for

eHardware Innovative Test Technology Systems (eHITS)



TRAINING COURSES IN Test Engineering

Hindustan Institute of Technology & Science

Hindustan Institute of Technology & Science (HITS), a Deemed to be University, is a leading prestigious and recognized institution in India, commenced in 1985, offers a wide spectrum of Undergraduate, Postgraduate, Diploma, Research & Doctoral Programmes. HITS is a part of the most illustrious Hindustan Group of Institutions which has seven NBA accredited undergraduate programmes and caters to the academic needs of over 20,000 students. HITS is one of the few Universities in India to be internationally accredited by IET, UK.

Hindustan is acclaimed with several notable accolades and rankings across the globe a few among them include NIRF, Times B-School, QS World University Rankings. Towering as a portal of learning, HITS is aesthetically landscaped to house 8 Academic Blocks, 16 Centres of Excellence for Research, state-of-the-art Workshops and Laboratories. With the noble vision of the Founder-Chairman, Late Dr. K.C.G. Verghese, "To Make Every Man a Success and No Man a Failure", Hindustan Institute of Technology & Science chisels its learners with a competitive spirit to face the future.

Qmax Test Equipments Pvt. Ltd.

Qmax, a global leader in Automated Test and Diagnostic equipment for Circuit Card Assemblies (CCAs) and Line Replaceable Units (LRUs), develops and manufactures a wide range of automated test equipments for PCB assemblies, Semiconductors and Cable harness. These are widely used in Defence, Aerospace, Power Generation and Distribution, Transportation, Bio-medical and Factory Automation where there are requirements to Test and Diagnose faults in Electronic control systems right from system level test up to component level.

Qmax is committed in regular updates of its software and device library and training and technical support to its customers. With this motto Qmax in association with HITS offers training on automated test engineering to its valued customers. Qmax has also been on-site and off-site training to their prestigious list of clients across India and to their International customers spread across several countries with a mission to create awareness on the testing and to enhance the skills of their valued customers.

CoE for eHITS

Hindustan Institute of Technology & Science (HITS) partnered with Qmax, established a world-class Centre of Excellence for automated electronic hardware test engineering facility to train and serve Government, Private R&D organizations, Educational institutions at the National / International levels to meet the future demands in test engineering and focus on capacity building. The main focus of CoE for eHITS is towards training man power in testing and diagnose faults in Electronic Systems starting from the component level to the system level tests.

Objectives of eHITS

eHITS provides extensive training on various electronic testing, functional research support to develop test software for validation of PCBs, conduct R&D for device characterization and modelling. Overall, eHITS aims to carry out various training and R&D activities to strengthen capacity of electronics engineers in hardware testing.

eHITS Facilities

- Automatic Test Equipment (ATE)
- Signature Test Trainer
- Boundary Scan (BS) Test Trainer
- Impedance Analyzer
- Short Locator
- PCB Tester
- In-Circuit Function Test Trainer
- Generation of Test Program Sets
- Trouble shooting & Debugging
- Test Software Development
- Schematic Generation for legacy and undiagnosed boards



About the Courses

The CoE offers three level training courses for Engineers / Scientists from PSUs / Faculty, UG, PG Students & Research Scholars of Educational Institutions.

- **Basic Training Course in Test Engineering for Electronics Hardware:**

Duration: **Two weeks (10 days)**

Scope: Introduction as well as hands on exposure on various test engineering methodologies.

- **Intermediate Technical Training Course in Test Engineering for Electronics Hardware:**

Duration: **4 weeks (20 days)**

Scope: Test program development using ATEs, BS Test techniques, Schematic Generation for legacy and undiagnosed boards using automated techniques.

- **Advanced Development Training Course in Test Engineering for Electronics Hardware:**

Duration: **8 weeks (40 days)**

Scope: Advanced / Emerging test technologies, Test Program Sets (TPS), Test interface adapter development using ATE and applications of Flying Probe Testers for testing complex PCB assemblies.

Objectives of Training program

The training program enables the participants:

- ▶ To evaluate the system under test, program development using ATEs, BS Test Techniques, Schematic Generation for legacy and undiagnosed boards and functional testing, boundary validation & edge testing.
- ▶ To gain first hand exposure on how to debug and troubleshoot, identify the faulty components as well as Re-work / precision soldering techniques to replace the faulty components with new ones.
- ▶ TPS development on ATE platform and other advanced testing concepts such as BS tests, testing using Robotic Flying Probe Testers etc.

Overview of Course Contents

Basic Course:

Fundamental principles in Test Engineering

Standard methodologies

PCB testing techniques

Laboratory procedures

Intermediate Course:

BS Test Techniques

Schematic Generation for legacy and undiagnosed boards using automated techniques

Advanced testing concepts

Introduction to Robotic Flying Probe Testers

Advanced course:

Test interface adapters development using ATE

TPS development on ATE Platform

Robotic Flying Probe Testers for PCB assemblies

Advanced test engineering concepts - Design for Testability rules

Outline of Course Syllabus

- Electronic components testing techniques and methodologies
- Out circuit and in-circuit testing techniques
- Electronic components in-circuit functional testing techniques
- Signature method of testing components
- BS testing concepts
- BS testing of VLSI ICs in a board
- Test program development of ICs like digital, analog and mixed signal
- Test and troubleshoot techniques of PCBAs
- Test program development and board test strategy
- Methodology of developing card edge functional test programs
- Learn and compare test techniques for component level and board level testing
- Failure analysis of board test results

Learning Outcomes

Upon successful completion of the training program the participants will be:

- ▶ Competent to take up multilayer PCB assemblies for testing and fault diagnosis, be it a legacy or a new technology PCBA.
- ▶ A Certified Test Engineer for Strategic Electronics, Electronics System Design & Manufacturing (ESDM) and Automation Industries.



Who can Attend

This Training Course is ideal for:

- People who work in ESDM, Testing / Quality Assurance departments, Maintenance support of various services in commercial, exposed to electronics repair, Industrial automation and Military / Aerospace industries.
- Existing Qmax customers in the following organizations and potential future users of ATE
 - ▶ Indian Naval Organizations such as Dock-Yards / Ship Repair Yards in Visakhapatnam / Mumbai / Kochi / Karwar / Goa / Portblair etc.
 - ▶ Indian Air Force Repair Depots (All Base Repair Depots and Signalling Units)
 - ▶ Indian Army Zonal / Core Workshops and Signalling Units
 - ▶ Indian Coast Guard
 - ▶ Para Military Organizations
 - ▶ Special Protection Groups
- Engineers / Scientists / Managers and Executives from PSUs such as BEL, HAL, BDL, ECIL, BHEL, AAI, VSSC, SHAR, ONGC, SAIL, Indian Railways, various DRDO labs such as LRDE / DLRL / RCI / CVRDE / MDL etc.

- Private sectors and corporate entities such as L&T, Ashok Leyland, TVS Group, TATA Group / NTPC etc.
- International Customers of Qmax & International institutions collaborated with HITS
- Faculty, UG, PG students & Research Scholars of Educational institutions

Eligibility

- Basic course - Degree in Engineering / Science / Diploma In Engineering / ITI
- Intermediate course - Degree in Engineering / Science / Diploma In Engineering
- Advanced Course - UG / PG Degree in Engineering

Trainers

Subject Matter Experts from Qmax & HITS

Venue

Jubilee Block, Hindustan Institute of Technology & Science, Bay Range Campus, # 1, IT Express Highway, Chennai - 603103

Fee Structure will be provided upon submission of enquiry form **

The fees structure includes Refreshment & Lunch.

Accommodation will be provided in the campus with additional charges.

All travel expenses of the trainees will be borne by the respective trainees.

***Special group discounts applicable**

Certification: Professional certification from eHITS.

Contact Details for Course Registration:

Mr. V. Vijayakumar

AVP / Sales and Marketing
Qmax Test Equipments Pvt. Ltd.
E: training@qmaxtest.com
M: +91 98408 88893 / +91 87545 40448
P: +91 44 2450 9627 Extn 409.

Dr. AL.Vallikannu

Head - CoE eHITS,
Hindustan Institute of Technology & Science
E: ehits@hindustanuniv.ac.in
M: +91 72000 94980
P: +91 44 27474385 Extn 284.

www.qmaxtest.com

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Scan for Registration

