

India Semiconductor Workforce Development Program (ISWDP) Custom Module offered by Rohde & Schwarz

January 11, 2025 | 11 AM-1.30 PM

Custom Module on Advanced Electronic Design for Reliable Operation: Power Integrity, Signal Integrity, and RF Performance Testing by Rohde & Schwarz

January 12, 2025 | 11 AM-12 PM : Custom Module Test

Objective of the Module: To provide a concise yet comprehensive overview of ensuring reliable operation in electronic designs, focusing on power integrity, signal integrity, and RF performance testing. The course will cover critical measurement techniques, component characterization, and RF testing relevant to emerging technologies.

Module Contents:

1. Introduction to Power Integrity (30 minutes)

Overview of Power Integrity

- Importance of power integrity in electronic designs
- Impact of decreasing supply voltages on power rail qualification

Measurement Techniques

- Making reliable power integrity measurements using digital storage oscilloscopes
- Using probes effectively for accurate measurements

Impact on Signal Integrity

- How power integrity influences signal integrity
- Strategies to address measurement challenges

2. Component Characterization and Measurement (30 minutes)

Basics of Component Characterization

- Introduction to probe stations and Vector Network Analyzers (VNAs)
- Key parameters for RF component characterization

Measurement Techniques with VNAs

- Measuring S-parameters, gain, time delay, and group delay
- Correcting intrinsic errors in VNA measurements

3. RF Performance Testing (30 minutes)

Essential RF Testing Parameters

- Measuring output power, calibration, and spurious emissions
- Understanding receiver sensitivity and selectivity
- Error Vector Magnitude (EVM) and its relevance

Testing for Emerging Technologies

- Specific considerations for 5G and 6G RF performance testing

4. Practical Applications and Q&A (30 minutes)

Hands-on Tips and Tricks

- Best practices for accurate measurements and troubleshooting

Case Studies

- Brief overview of real-world scenarios and solutions

Q&A Session

- Addressing participant questions and clarifications

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<https://iswdp.registeryourseat.in/index.php>

This module, along with its certification, is available free of charge exclusively to Cohort 1, 2, and 3 participants of ISWDP. To enroll, participants must click on the registration link, log in with their credentials, and choose the Custom Module. The registration deadline is December 29th, 2024. Please note that the meeting link will be shared only after successful registration.



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India Semiconductor Workforce Development Program (ISWDP) Custom Module offered by Tektronix

January 4, 2025 | 10:00AM - 1:00PM:

Custom Module on Electrical Characterization of Material and Device by Tektronix

January 5, 2025 | 11:00AM - 12:00PM:

Custom Module Test

Course Objective:

To provide a comprehensive overview of precision characterization techniques essential for evaluating and qualifying semiconductor materials, processes, and devices. This course will highlight the importance of accurate measurements in semiconductor fabrication and demonstrate the use of Keithley-Tektronix instruments for various characterization tasks.

1. Introduction to Semiconductor Characterization (30 minutes)

- Importance of Characterization.
- Role of characterization in material evaluation, process optimization, and device fabrication.
- Overview of key characterization tasks: material evaluation, process qualifications, and device testing.
- Overview of Electrical Characterization Techniques.

2. Material and Process Characterization (30 minutes)

- Material Characterization.
- Techniques and equipment used for precision requirements.
- Importance for substrate qualification and doping.
- Resistivity Measurements.
- Application in deposition and metallization process qualifications
- Conductivity Measurements.
- Key steps in evaluating fabrication processes and process Characterization.

3. Device Characterization (45 minutes)

- Application in material qualification and process optimization.
- Test Structures for IV and CV Measurements.
- Testing resistors, junctions, capacitors, and MOS-CAP.
- Importance of MOSFET Testing.
- MOSFET parameter testing such as Voltage handling capability, Breakdown voltages, - Leakage current, Saturation voltages and currents, gain and Rds ON measurements.
- Wafer-Level Testing, assessing devices on a wafer to determine process yield.

4. Q&A and Wrap-Up (15 minutes)

- Addressing participant questions and clarifications.

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