

**A Report on One-day Technical Training for Faculty on
“Microwave Instrumentation”
Organized by Department of Electronics & Communication Engineering
in association with
Institution’s Innovation Cell, MITS
Date: 08.11.2024**



Report Submitted by: Mr. M. Veeraiah, Assistant Professor, Department of ECE.

Resource person Details: Mr. J. Ravi Kumar, Senior Technical Associate in TECHINILAB INSTRUMENT, Bangalore.

Mode of Conduct: Offline

Report Received on 03.12.2024.

Attendance: 20 participants

Time: 10.00 AM to 12.00 PM

Venue: Room Number EB203

The Technical Training began at **10:00 AM** with a welcome address delivered by **Mr. M. Veeraiah**, Assistant Professor in the Department of ECE, MITS, Madanapalle. The esteemed Technical members included **Dr. S. Rajasekaran** Head of the Department of ECE, MITS, **Mr. J. Ravi Kumar**, Senior Technical Associate in **TECHINILAB INSTRUMENT**, Bangalore.

The Department of Electronics and communication Engineering organized a technical training session on **Microwave Instruments** for faculty on 08-11-2024. The session, conducted **TECHINILAB INSTRUMENT**, Bangalore witnessed active participation from **20 faculty members** of ECE. The training was aimed at enhancing technical skills in microwave instrumentation and demonstrating their application in research and teaching.

Objectives of the Training

The training program was designed to:

1. Provide a comprehensive overview of **Microwave lab instruments**.
2. Explore **Antenna-related instrumentation**, including characterization and testing.
3. Demonstrate the working principles of **Vector Network Analyzers (VNA)** for network parameter measurements.
4. Showcase the functionalities of **Spectrum Analyzers** for signal evaluation in the frequency domain.
5. Highlight applications of these instruments in **Research and Teaching methodologies**.

Training Highlights

The session comprised both theoretical insights and practical demonstrations:

Introduction to Microwave Lab Instruments:

- Overview of microwave engineering principles.
- Introduction to various instruments and their laboratory applications.

Antenna Testing and Measurement:

- Practical demonstration of antenna parameters like radiation patterns and gain.
- Applications in modern wireless communication system development.

Vector Network Analyzer (VNA):

- Detailed explanation of S-parameters and calibration methods.
- Hands-on practice with network measurements for RF and microwave devices.
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Spectrum Analyzer:

- Demonstration of signal analysis techniques for frequency, amplitude, and noise.
- Relevance in satellite communication, IoT, and emerging wireless technologies.

Program Outcomes:

The training program achieved the following outcomes

1. **Enhanced Technical Knowledge:** Faculty gained a deeper understanding of microwave lab instruments and their operational principles.
2. **Improved Research Capability:**
 - Participants learned how to apply these instruments to advanced research areas, such as:
 - Designing efficient antennas for 5G and IoT applications.
 - Characterizing high-frequency devices for semiconductors and integrated circuits.
 - Developing innovative RF solutions for medical imaging, defence, and space applications.

Participant Feedback:

The session was highly interactive, with participants appreciating the hands-on approach and practical examples provided by the trainers. Many faculty members expressed their intention to incorporate the demonstrated techniques in their ongoing research and academic activities.

Conclusion:

The training concluded at 12:00 PM with a vote of thanks delivered by Mr. M. Veeraiah, Assistant Professor. The session successfully equipped faculty with the skills and knowledge necessary for both academic and research advancements in microwave.