

LONG-RANGE WIRELESS COMMUNICATION USING

LoRa & ESP32

FROM FUNDAMENTALS TO BUILDING
A REAL LONG-RANGE WIRELESS NETWORK



WIRELESS
FUNDAMENTALS



UNDERSTAND
LoRa



BUILD
ESP32 + LoRa



TRANSMIT &
RECEIVE PACKETS



MEASURE
RSSI / SNR



BUILD IoT
APPLICATION



INDUSTRY
APPLICATION



DATE
08th September 2026
Tuesday



TIME
10 am to 5 pm



VENUE
PRP 406



**HANDS-ON
LoRa + ESP32
SESSIONS**

COURSE CONTENT / HIGHLIGHTS



Wireless Communication Fundamentals
Understanding frequency, antennas, propagation, range and wireless communication concepts.



Understanding LoRa Technology
LoRa, LoRaWAN, Chirp Spread Spectrum, range and low-power communication.



ESP32 + LoRa Hardware
Interface ESP32 with SX1278/RA-02 and understand SPI communication and connections.



Building a LoRa Wireless Link
Program two ESP32 nodes and transmit and receive real wireless packets.



RSSI, SNR & Communication Analysis
Measure signal strength, signal quality, packet loss and communication reliability.



Hands-on LoRa Challenge
Design and test a reliable wireless communication system using ESP32 and LoRa.



BUILD & TEST YOUR OWN LoRa IoT NETWORK

- ✓ Hands-on ESP32 + LoRa interfacing
- ✓ Real wireless packet transmission
- ✓ RSSI & SNR measurement
- ✓ Acknowledgement & packet reliability
- ✓ Practical communication testing
- ✓ Real-world IoT applications

LEARN • BUILD • MEASURE • APPLY

RESOURCE PERSON



Saisharan Murali
Founder & Technical Lead
GreenWave TechLabs

IoT • Embedded Systems • LoRa • Intelligent Transportation Systems

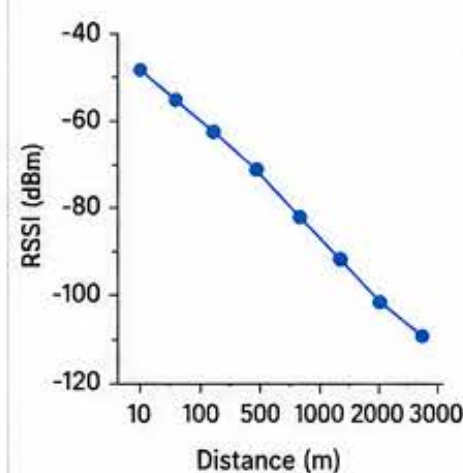
WORKSHOP SNAPSHOT

PACKET TRANSMISSION



TX → SEQ 001
RX → SEQ 001
ACK → RECEIVED

RSSI vs DISTANCE



PACKET RELIABILITY

PACKETS SENT	100
PACKETS RECEIVED	97
PACKET LOSS	3%
DELIVERY RATIO	97%

LoRa IoT NETWORK



Limited seats!
Register early



REGISTRATION FEE:

UG/PG/Research Scholars: Rs. 300 + GST

A certificate will be issued to all the registered participants.

REGISTER & PAY ONLINE:

<https://events.vit.ac.in/>



ABOUT SENSE

SENSE at VIT was established for imparting state-of-the-art knowledge in Electronics and Communication Engineering and allied areas. The school has set up laboratories with excellent infrastructure in the areas of Electronics, Communication, VLSI, Embedded, Sensors and Nanotechnology. Faculties are actively involved in R&D activities and are working on research projects funded by government organizations like DRDO, ISRO (RESPOND), and DST.

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