Department of Electronics and Telecommunication Engineering

Academic Year 2025 - 26

Date: 15 July 2025

"Blended Learning Approach through Online Workshop on Automotive Electronics

Organized by: Skill-Lync (online) "Introduction to Electronics in Automotive" YouTube

Date : 13 July 2025 (B1 Batch) , 15 July 2025 (B2 Batch)

Mode: Online (recorded)

Prepared by: Mr. Vijay Barkade, Assistant Professor, E&TC Dept.

Participants: 28 Final-Year B.Tech E&TC students.

Objective

> Provide students with a structured overview of how electronics are integrated into modern vehicles, covering hardware, embedded software, communication, and system-level design. Skill-Lync.

> Connect core E&TC topics (signals, embedded systems, power electronics, communication protocols) to real automotive examples.

> Present current industry trends (electrification, ADAS, vehicle networking) and career paths in automotive electronics.

Description:

The Skill-Lync session gives a practical introduction to electronics in vehicles — starting from the evolution of automotive electronics, moving into ECU architecture, sensors & actuators, in-vehicle networks, power electronics for electrification, and a look at ADAS and connectivity.

It blends conceptual explanations with industry use-cases and career guidance for students seeking automotive roles.

Learning Outcomes:

➤ **Identify** major automotive electronic subsystems (ECUs, sensors, actuators, power electronics).

➤ **Explain** the role of communication buses (CAN/LIN/FlexRay/Automotive Ethernet) and where each is used.

➤ **Relate** sensor signals to signal-processing steps (conditioning, filtering, ADC) required before control decisions.

Detailed Content:

Module A — Evolution & Scope of Automotive Electronics

Module B — Electronic Control Units (ECUs) & Vehicle Architecture

Module C — Sensors & Actuators

Module D — In-Vehicle Networks & Protocols

Module E — Power Electronics & Electrification

Module F — ADAS, Perception & Control

Module G — Software & Standards (AUTOSAR, ISO 26262)

Module H — Testing, Calibration, Industry Practices & Careers

Module I — Q&A / Case Studies

Impact:

➤ Students gained industry-oriented knowledge of modern automotive electronic systems.

➤ Bridged the gap between theoretical learning and practical automotive applications.

➤ Improved understanding of ECUs, sensors, actuators, and communication protocols (CAN, LIN, etc.).

➤ Increased student engagement and participation through interactive online content.

➤ Encouraged students to explore emerging domains like Electric Vehicles (EVs), ADAS, and Automotive Networking.
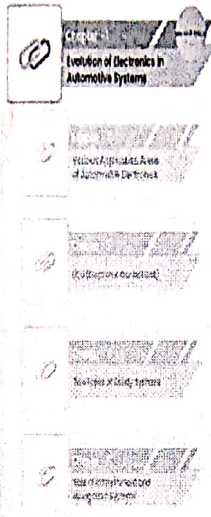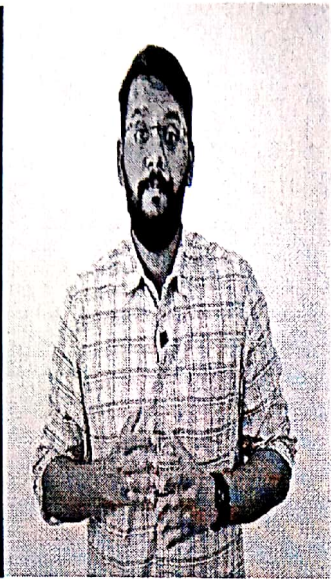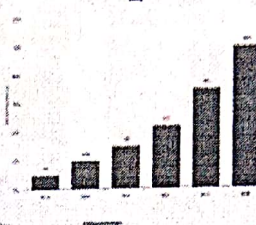
Evolution of electronics in cars

Evolution of electronics in cars

Components of Air Bags

- There are three parts to an air bag systems that helps to accomplish passenger protection :
- The Airbag, made of a thin, nylon fabric, which is folded into the steering wheel.
- The Sensor [crash sensor], the device that tells the bag to inflate.
- The inflator - A rapid pulse of Nitrogen Gas, which is used to inflate the airbag.

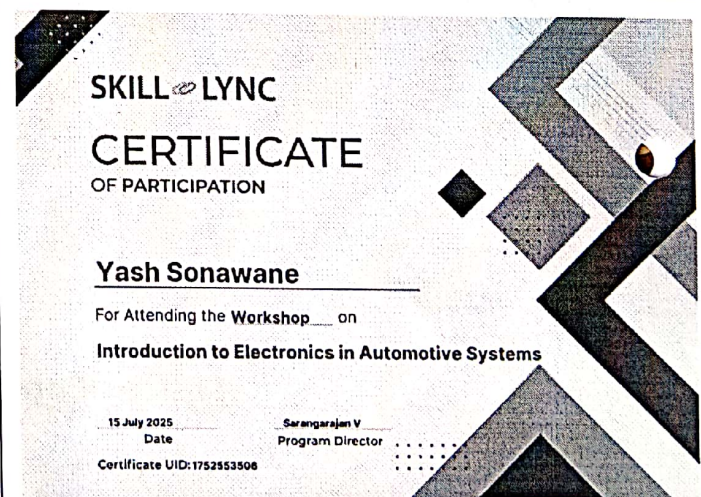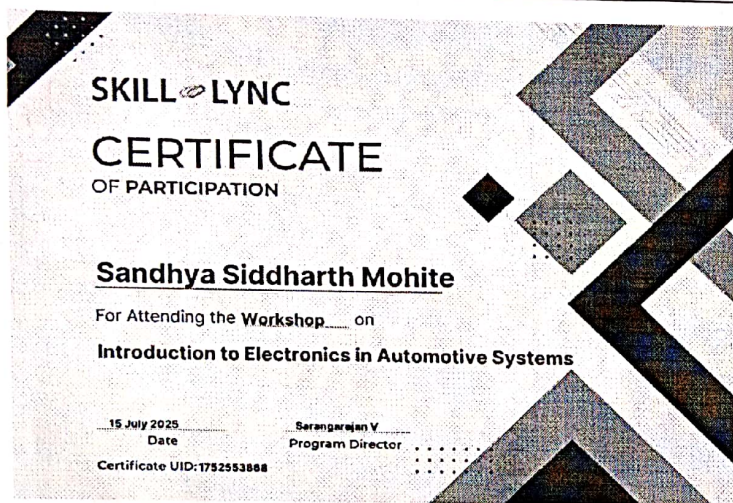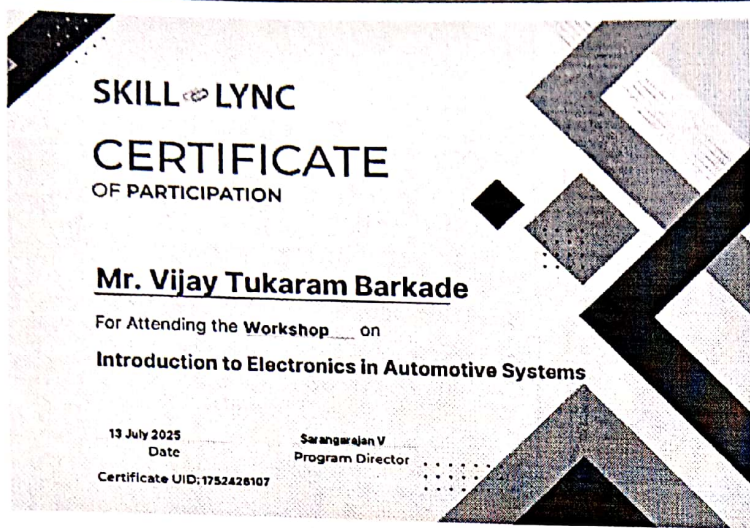## Career Path and Job Opportunity

- Autonomous vehicles in the Asia-Pacific region will increase to 24 million units by 2024, claims a report by Graphical Research.
- Shared mobility service will adopt the electric vehicles faster than private owners and by 2040, around 80 per cent of the global ride-sharing fleet will be attributed to Evs, claims a report by BloombergNEF.

Session Content Details Images

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

Mr. Vijay Tukaram Barkade

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

13 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752426107

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

ABHISHEK UKALE

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

15 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752585727

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

Sandhya Siddharth Mohite

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

15 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752553868

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

Shivsagar Pokale

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

15 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752553401

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

Abhay Nagare

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

15 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752553455

SKILL☯LYNC

CERTIFICATE
OF PARTICIPATION

Yash Sonawane

For Attending the Workshop___ on

Introduction to Electronics in Automotive Systems

15 July 2025
Date

Sarangarajan V
Program Director

Certificate UID: 1752553506

Sample Certificates Received to Students

I. PEER REVIEW AND CRITIQUE

Category: Internal/External/Interdepartmental
Score: (1:Least   2: Moderate   3:Highly)
Question 1. Is this Innovative Teaching and Learning Methodology useful during content delivery?
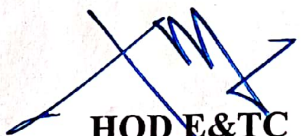
Question 2. Did this innovation increase student motivation or participation?

Question 3. Will it show improvement in student learning?

Question 4. Suggestions for improvement in future iterations.

Category	Name of Peer	Organiza tion	Q.1	Q.2	Q.3	Q. 4 Suggestion/Critique
Internal	mr. A. A. Tatugade	RSCOE	3	2	3	Well planned session, could include hands on simulation for better students learning. 17/5/25

Faculty Coordinator
Mr .V. T. Barkade

HOD E&TC
Dr. S. C. Wagaj

HEAD OF DEPARTMENT
Electronics & Tele Communication
JSPM's Rajarshi Shahu College of Engineering
(An Autonomous Institute)
Tathawade, Pune - 411 033. M.S. (India)