



Workshop Report



on

“Edge Embedded Systems using STM32 for Smart Applications” 10th and 13th April 2026

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GTU–School of Engineering and Technology organized a two-day workshop on “**Edge Embedded Systems using STM32 for Smart Applications**” on 10th and 13th April 2026 from 10:30 AM onwards at Lab No. 330, GTU-SET. The workshop was conducted by Dr. Brijesh L. Kundaliya and Dr. Miral M. Desai, Assistant Professors at CSPIT, CHARUSAT. It witnessed active participation from BE EC and ME AIDS students, with a total of 37 participants, making the event informative and engaging for all attendees.

1. Introduction

A two-day workshop on “Edge Embedded Systems using STM32 for Smart Applications” was organized by the Electronics & Communication Department, School of Engineering and Technology, Gujarat Technological University (GTU-SET). The workshop focused on providing practical exposure to embedded systems and IoT-based applications.

2. Objective of the Training

- To introduce embedded systems and IoT fundamentals
- To provide hands-on experience with STM32
- To understand hardware-software integration
- To design smart applications
- To develop real-time system skills

3. Session Deetail:

Day 1: Introduction to Embedded Systems, IoT, STM32, Arduino, Proteus & Digital Sensors

The first day of the workshop focused on building a strong foundation in embedded systems and Internet of Things (IoT). The session began with an introduction to embedded systems, explaining their architecture, components, and real-world applications such as smart appliances, automotive systems, and healthcare devices.

Participants were then introduced to the Internet of Things (IoT), including its concept, working principles, and its role in connecting physical devices through the internet for data exchange and automation. Various IoT application domains such as smart homes, smart cities, and industrial automation were discussed.

The session continued with hands-on exposure to popular development platforms like STM32 and Arduino. The architecture, pin configuration, programming environment (Arduino IDE and STM32CubeIDE), and basic interfacing techniques were explained. Participants learned how to write simple programs and upload them to microcontroller boards

Day 2: Serial Communication, Sensors & Actuators, IoT Applications

The second day focused on communication protocols and practical implementation of embedded systems in IoT applications. The session began with serial communication techniques, including UART, SPI, and I2C protocols. Their working mechanisms, differences, advantages, and use cases were explained with examples.

Participants then explored various sensors and actuators in detail. The session covered how sensors collect environmental data (temperature, humidity, motion, etc.) and how actuators (motors, relays, LEDs) respond to control signals. Practical interfacing techniques with microcontrollers were demonstrated. Hands-on sessions allowed participants to implement small projects such as LED control, sensor data reading, and actuator-based automation systems.

4. Conclusion

The workshop was successfully conducted with enthusiastic participation from all attendees. It provided valuable practical exposure to embedded systems and IoT technologies through hands-on sessions and demonstrations. Participants gained a better understanding of real-world applications and implementation techniques. The interactive sessions enhanced their technical skills and problem-solving abilities. Overall, the workshop proved to be highly informative and beneficial for the students.



