



ATHARVA EDUCATIONAL TRUST'S
ATHARVA COLLEGE OF ENGINEERING

(Approved by AICTE, Recognized by Government of Maharashtra
& Affiliated to University of Mumbai - Estd. 1999 - 2000)

Academic Year 2025-26(EVEN SEM)

ISO 2100:2018 ISO 14001:2015 ISO 9001:2015

NAAC Accredited A⁺

Department of Electronics & Telecommunication Engineering

Date: 8/01/2026

ACE/EXTC/FR/22/2025-26

Department of Electronics and Telecommunication
Orientation report

Event Name	Mini Project Orientation
College/Institute Name	Atharva College of Engineering
Department	EXTC
Date & Time	08/01/2025, 10.5 AM Onwards
Mode of Conduction	Offline
Coordinator of Event	Prof. Vanshri Ramteke
Targeted Audience	SE Students
No. of Participants:	36
Brief Description of Event	<p>The objective of the event:</p> <p>The primary objective of the mini project is to provide students with hands-on experience in embedded systems by applying theoretical concepts to real-world applications using the ATmega168/328 microcontroller.</p> <ul style="list-style-type: none">• To understand the architecture, memory organization, and peripheral features of the ATmega168/328 microcontroller.• To explore internal functional blocks such as timers, ADC, PWM, and serial communication interfaces.• To gain proficiency in Embedded C programming using development tools for microcontroller programming and



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	<p>interfacing.</p> <ul style="list-style-type: none">• To interface wireless modules, sensors, and actuators, and integrate IoT platforms for real-time control and monitoring.• To design, develop, and convert a working prototype into a marketable embedded product, considering DFM and cost analysis.• To design schematics and PCB layouts using EDA tools and apply standard fabrication practices. <p>Topic covered in the event :</p> <p>1. Advanced Technologies and Project Integration</p> <p>Wireless Communication (Bluetooth, Wi-Fi, Zigbee, RF 434MHz, LoRa)</p> <p>Sensor Interfacing (Gas, Fire, DHT11, Obstacle, Soil Moisture, etc.)</p> <p>Actuator Interfacing (Relay, Motor, Buzzer)</p> <p>Display Interfacing (LCD, LED, OLED, 7-Segment)</p> <p>Motor Control with L298N Motor Driver</p> <p>IoT Integration with ATmega (ThingSpeak, MQTT, Blynk, Google Firebase)</p> <p>Real-Time Data Monitoring and Control</p>
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	<p>2.Introduction to ATmega168/328 Microcontroller</p> <p>Understanding microcontroller architecture</p> <p>Pin Mapping and Peripheral Understanding</p> <p>Memory Organization & Power Management</p> <p>Programming I/O Ports</p> <p>Clock and Power Management</p> <p>3. Programming ATmega168/328</p> <p>Understanding Embedded C Programming</p> <p>Installing and Setting Up IDEs</p> <p>Writing and Compiling Code in Arduino IDE</p> <p>GPIO (General Purpose Input/Output) Interfacing</p> <p>Sensor Interfacing</p> <p>Serial Communication</p> <p>Interrupt Handling</p> <p>4. Design for Microcontroller Projects</p> <p>Understanding PCB Design</p> <p>Schematic Creation & PCB Layout Design</p> <p>Using PCB Design Software (Eagle, Altium, KiCAD, EasyEDA)</p> <p>Design Rules & Guidelines</p>
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	<p>PCB Fabrication Process</p> <p>Outcomes:</p> <p>At the end of the orientation program, students were able to:</p> <ol style="list-style-type: none">1. Identify pin configurations, explain memory types, and write simple code to configure I/O ports.2. Configure and program internal peripherals like timers, interrupts, and serial communication modules (USART, SPI, I2C).3. Develop, compile, and upload programs using IDEs, and implement sensor interfacing and interrupt handling.4. Design and build embedded applications integrating sensors, actuators, displays, and wireless modules with cloud-based data logging and control.5. Create a prototype, optimize it for production, and present a final project report including BOM and feasibility study.6. Create a PCB layout, follow design rules, and generate Gerber files for the fabrication of microcontroller-based projects
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Photographs of the Event :



Prof. Vanshri R.
SE Mini-Project
Co-ordinator,ACE

Dr. Kiruthika B.
HOD EXTC, ACE



Dr. Ramesh Kulkarni
Principal, ACE