

School of Engineering
Department of Electronics and Communication Engineering

Date: 17-02-2023

Report

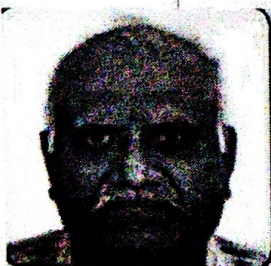
on

**Guest Lecture: "DIGITAL DESIGN CIRCUITS USING
MICROPROCESSOR AND MICROCONTROLLER"**

Overview of Program

The Department organized a Guest Lecture on "Digital Design Circuits using Microprocessor and Microcontroller" by Dr. Ch. Kameshwar Rao, Senior Deputy Manager, BHEL, Hyderabad. The lecture focused on processor architecture, embedded system design, and industrial automation technologies.

Date Organized	Title of Program	Name of Resource Person	Participants
14-02-2023	"Digital Design Circuits Using Microprocessor and Microcontroller"	Dr. Ch Kameshwar Rao, Senior Deputy Manager, BHEL, Hyderabad	B. Tech. ECE II-II (92 Students) and ECE faculty members



Dr. Ch. Kameshwar Rao

Purpose of Program

The objective of the programme was to familiarize students with digital circuit design using microprocessors and microcontrollers while providing exposure to industrial automation and embedded system applications. The session also aimed to strengthen students' practical knowledge of processor-based systems.

Program Highlights

The lecture included discussions on microprocessor and microcontroller architecture, memory organization, peripheral interfacing, communication protocols, embedded system design, and industrial applications. The speaker presented examples from BHEL projects and highlighted current industry requirements for embedded system engineers.

1. Architecture of Microprocessors and Microcontrollers

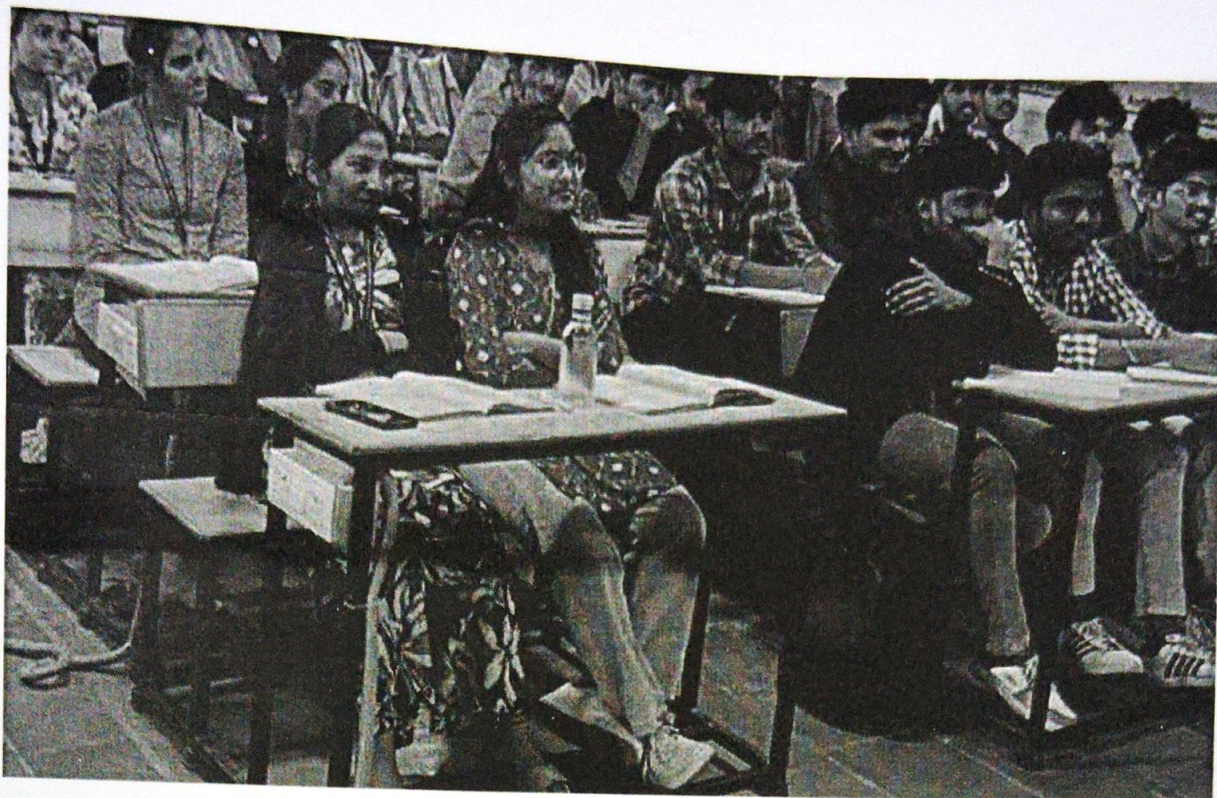
The session began with a detailed explanation of the architecture of microprocessors and microcontrollers, enabling students to understand their internal organization and functional components. The resource person explained the roles of the Arithmetic Logic Unit (ALU), Control Unit, registers, memory, and input/output ports, highlighting the differences between microprocessors and microcontrollers. Through practical examples, students learned how these devices serve as the foundation of modern embedded systems and electronic control applications, thereby strengthening their understanding of processor-based system design.

2. Memory and Peripheral Interfacing

Students gained valuable knowledge about memory organization and peripheral interfacing techniques used in microprocessor and microcontroller-based systems. The speaker explained different types of memory, including RAM, ROM, EEPROM, and Flash memory, along with their applications in embedded systems. The lecture also covered interfacing of peripheral devices such as sensors, displays, keyboards, and communication modules. This session helped students understand how hardware components communicate efficiently to perform real-time control and monitoring operations.

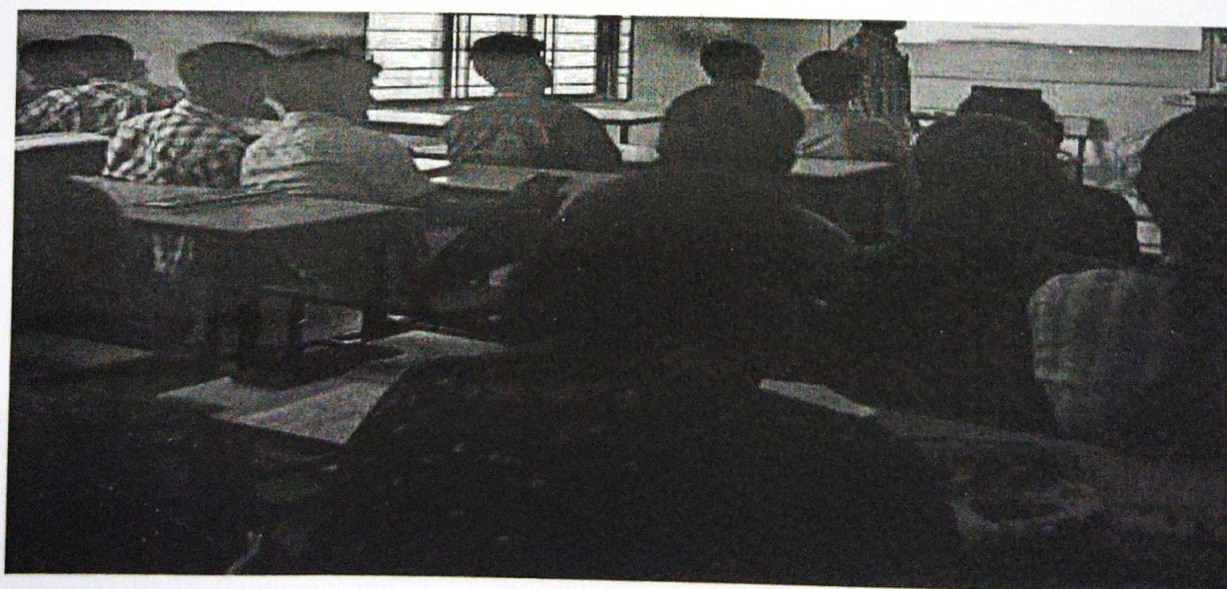
3. Embedded System Design

The resource person introduced the concepts of embedded system design by explaining the integration of hardware and software for developing dedicated electronic systems. Students learned about the design methodology, software development process, real-time operating concepts, and the role of embedded systems in consumer electronics, automotive systems, healthcare devices, and industrial automation. Practical examples provided during the lecture enabled students to appreciate the importance of embedded technology in modern engineering applications.



4. Industrial Automation Case Studies

Students were exposed to several industrial automation case studies based on real-time applications implemented at BHEL. The speaker explained how microprocessors and microcontrollers are employed in automation systems for process control, power generation, manufacturing industries, and monitoring systems. These practical examples helped students relate classroom concepts to industrial applications and provided them with valuable insights into the technological advancements and engineering practices followed in large-scale industries.



5. Career Opportunities in Embedded Systems

The lecture concluded with an informative discussion on career opportunities in embedded systems, industrial automation, and electronics industries. Students actively participated in the interactive session by seeking guidance on internships, higher education, certification

courses, and employment opportunities in core companies. The resource person encouraged students to strengthen their programming skills in Embedded C, understand communication protocols, and gain practical experience with microcontrollers and development boards to build successful careers in embedded system design, IoT, robotics, and industrial automation.



Outcome of Program

Students gained practical knowledge of processor-based system design and embedded technologies. The lecture improved their understanding of digital circuit implementation and motivated them to pursue careers in embedded systems, industrial electronics, and automation.

Guest Lecture	Mapped POs & PSOs	Mapped SDGs
Digital Design Circuits using Microprocessor and Microcontroller (14-02-2023)	PO1, PO2, PO3, PO5, PO12 PSO1, PSO2	SDG 4: Quality Education SDG 8: Decent Work and Economic Growth SDG 9: Industry, Innovation and Infrastructure

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 HoD 17.02.23
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 Electronics & Communication Engineering
 J. Narasimha Reddy Education Society
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