NEW HORIZON COLLEGE OF ENGINEERING
New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

HANDS-ON WORKSHOP ON IC FABRICATION PROCESS AND BUILDING BLOCKS OF VLSI DESIGN

Date: 04-09-2025
Duration: 2:00 PM – 04:30 PM
Workshop Topic: IC Fabrication Process and Building Blocks of VLSI Design
Number of Participants: 24
Resource Person: Mr. Vikranth Manyam, Senior Manager, Capgemini

1. Introduction

The Department of Electronics and Communication Engineering organised a Hands-on Workshop on IC Fabrication Process and Building Blocks of VLSI Design on 04.09.2025. The objective of the workshop was to familiarise students with the fundamentals of semiconductor device fabrication and provide practical exposure to the essential stages of Very Large-Scale Integration (VLSI) design.

The session was conducted by Mr. Vikranth Manyam, Senior Manager, Capgemini, who has extensive industry experience in VLSI design and semiconductor technology.

2. Objectives

The objectives of the session were to:

- To provide participants with a clear understanding of the IC fabrication process, including wafer preparation, lithography, doping, etching, and packaging.
- To introduce the building blocks of VLSI design and their role in modern integrated circuits.
- To bridge the gap between theoretical knowledge and practical industry requirements.
- To equip students with hands-on learning in design methodologies relevant to semiconductor industries.

3. Workshop Highlights

i) **Session on IC Fabrication Process:**
- Overview of semiconductor materials and wafer preparation.
- Step-by-step explanation of oxidation, photolithography, diffusion, ion implantation, and metallisation.
- Discussion on fabrication challenges, yield, and reliability.

ii) **Session on VLSI Design Building Blocks:**
- Introduction to logic gates, flip-flops, and memory units as fundamental design components.
- Hierarchical design approach – from RTL to GDSII flow.
- Insights into CMOS technology and its importance in scaling and power optimization.

iii) **Hands-on Activities:**
- Demonstration of basic design flow using CAD tools.
- Practical exposure to layout design and simulation.
- Case studies highlighting industry applications in IC and VLSI.

4. Outcomes of the Workshop

- Participants gained practical insights into IC fabrication steps and VLSI design flow.
- Students were able to connect theoretical circuit concepts with real-world semiconductor applications.
- The workshop enhanced participants' awareness about career opportunities in VLSI and semiconductor industries.
- Improved confidence in handling design tools and understanding process constraints.

5. Feedback

The workshop was highly appreciated by the participants for its interactive and practical approach. The students found the sessions informative, engaging, and relevant to current technological trends in the electronics industry.

6. Conclusion

The Hands-on Workshop on IC Fabrication Process and Building Blocks of VLSI Design was a successful initiative that provided a strong foundation in semiconductor technology and VLSI design methodology. The Department of Electronics and Communication Engineering extends sincere gratitude to the resource person, Mr. Vikranth Manyam, and to all the participants for making the workshop an enriching learning experience.

Faculty Coordinator
Dr. Monika Gupta

HoD-ECE