



Zakura Campus

Department of
ELECTRICAL ENGINEERING
Institute of Technology, University of Kashmir

REPORT ON WINTER INTERNSHIP PROGRAM

“Computational and Hardware Fundamentals in Electrical Engineering”

Department of Electrical Engineering
Institute of Technology, Zakura Campus
University of Kashmir

1. Introduction

The Department of Electrical Engineering successfully organized a **Winter Internship Program** titled *“Computational and Hardware Fundamentals in Electrical Engineering”* from **28 January 2025 to 28 February 2025**.

The program was designed to provide students with a balanced exposure to computational tools and practical hardware implementation, thereby strengthening their conceptual understanding as well as hands-on skills in core electrical engineering domains.

2. Objectives of the Program

The internship aimed to:

- Equip students with fundamental knowledge of MATLAB and Python-based computation
- Provide practical exposure to electrical and electronic hardware systems
- Develop skills in simulation, analysis, and problem-solving
- Encourage hands-on learning through laboratory sessions and mini projects
- Bridge the gap between academic learning and real-world applications

3. Program Structure

The internship was conducted over **four weeks (20 working days)** with:

- Two sessions per day (1 hour each)
- Total of 80 sessions (lectures + lab work)
- Combination of theoretical lectures, simulation exercises, and hardware implementation

Venues:

- Control & Computation Lab
- Basic Electrical Lab
- Power Electronics Lab
- Power System Lab



4. Resource Persons

The program was conducted by:

- **Dr. Ward Ul Hijaz Paul**
- **Dr. Parvaiz Ahmad Ahangar**
- **Ms. Jaseera Khan**
- **Mr. Muwahib Murtaza Ganie**

Each resource person contributed through lectures, laboratory demonstrations, and hands-on sessions, ensuring a comprehensive learning experience.

5. Key Areas Covered

Computational Module

- MATLAB fundamentals, plotting, and simulations
- Python programming basics and data handling
- Numerical methods and problem solving
- Data visualization techniques

Hardware Module

- Basic electrical and electronic components
- Diodes, transistors, and amplifier circuits
- Operational amplifiers and applications
- Arduino programming and interfacing
- Sensor-based applications and mini-projects

6. Participation and Engagement

- The program witnessed active participation of selected students from engineering backgrounds
- Attendance criteria of minimum 90% was maintained for certification
- Students actively engaged in hands-on experiments and mini-project development

7. Outcomes of the Program

The internship resulted in:

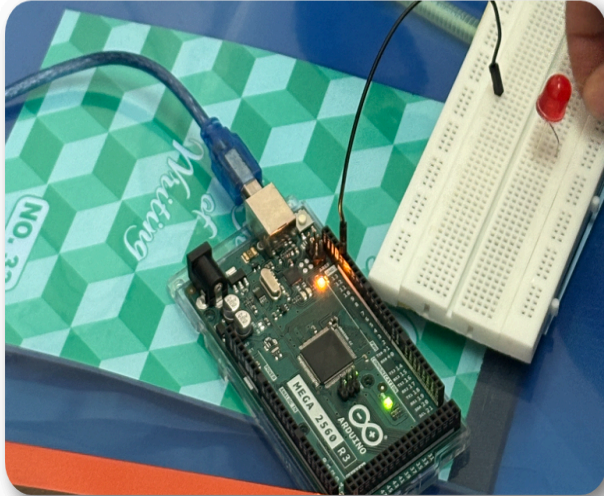
- Improved proficiency in MATLAB and Python tools
- Enhanced understanding of hardware implementation and circuit design
- Development of analytical and practical problem-solving skills
- Increased student confidence in handling real-time engineering tasks
- Positive feedback from participants regarding course structure and delivery



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8. Glimpses of the Program





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9. Highlights

- Structured 4-week intensive training program
- Balanced integration of software and hardware learning
- Strong emphasis on practical exposure and skill development
- Successful completion with high student engagement and attendance

10. Conclusion

The Winter Internship Program was conducted successfully and achieved its intended objectives. It provided students with a valuable platform to enhance both their technical knowledge and practical skills.

The Department expresses its sincere gratitude to all resource persons and participants for their contribution to the success of the program.

11. Acknowledgement

The Department of Electrical Engineering expresses its gratitude to the Hon'ble Vice Chancellor and the Director, Institute of Technology, Zakura Campus for their support and encouragement in organizing such academic initiatives.