Department of Electrical and Electronics Engineering

Report

Faculty Development Program (FDP): *Modeling and Simulation Using MATLAB*

(December 16 to 20, 2024)

The Faculty Development Program (FDP) on "Modeling and Simulation Using MATLAB" was organized by the Electrical and Electronics Engineering Department of Maharaja Surajmal Institute of Technology (MSIT), New Delhi, in collaboration with the Department of Mechanical Engineering, NITTTR Chandigarh, from December 16 to 20, 2024. The event aimed to provide in-depth training in modeling and simulation techniques using MATLAB and Scilab, highlighting their importance in engineering research and education.

The program covered topics such as mathematical modeling, dynamic system simulations, signal processing, artificial neural network (ANN) modeling, IoT systems, and Scilab programming. Expert instructors delivered theoretical sessions and guided hands-on practice to ensure participants gained practical knowledge.

Key Highlights:

- **Day 1:** Introduction to mathematical modeling and MATLAB, Optimization Problem by Dr. S.S. Dhami Prof. Mechanical Department, NITTTR Chandigarh, followed by sessions on data visualization, and 2D &3D plotting, by Dr. Deepam Goyal(Assistant Professor, Chitkara University, Rajpura).
- **Day 2:** Focus on MATLAB programming and dynamic system simulations with comprehensive sessions and practice led by Dr. Dhami.
- **Day 3:** Introduction to Simulink for block-based modeling and simulation of closed-loop systems, with hands-on exercises under Dr. Dhami's guidance.
- **Day 4:** Advanced applications of MATLAB in signal processing and ANN modeling, with real-world examples presented by Dr. Vanraj(Consultant - Predictive Condition Monitoring) and Dr. Lini Mathew (Prof. Electrical Department, NITTTR Chandigarh.
- **Day 5:** Exploration of IoT integration using MATLAB by Mr. Arman Ansari (DesignTech Systems)and an introduction to Scilab for numerical computation by Dr. Jagriti Saini (Eternal RESTEM, Chandigarh).

The program concluded with interactive quizzes and practical sessions, providing participants with valuable insights into the tools' real-world applications. The FDP was highly successful in equipping participants with essential skills for modeling and simulation, enabling them to apply these techniques in their teaching and research endeavors.