Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex

Report on Two-Day Workshop on Advanced Engine & Chassis Engineering

Topic: Two-Day Workshop on "Advanced Engine & Chassis Engineering"

Organized by: Department of Automobile Engineering, Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex (DSCSITSC)

Organized for: 1st and 2nd Year ITI Students of Harichand Guruchand Thakur Govt. ITI, Bagda.

Speaker:

- Mr. Kalyan Mukherjee, Assistant Professor, Department of Automobile Engineering
- Mr. Pritam Bhattacharjee, Assistant Professor, Department of Automobile Engineering
- Mr. Shankha Ghosh, Assistant Professor, Department of Automobile Engineering
- Mr. Sandip Bhadra, Senior Technical Assistant, Department of Automobile Engineering
- Mr. Supriya Dhara, Junior Technical Assistant, Department of Automobile Engineering

Date: 11th December to 12th December 2025

Time: From 11:00 AM to 04:00 PM

Venue: Satish Dhawan Automobile Workshop Shed

No. of Participation: 26

Introduction:

The Department of Automobile Engineering, Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex (DSCSITSC) organized a two-day hands-on workshop on "Advanced Engine & Chassis Engineering" for 1st and 2nd Year ITI Students, Bagda Government ITI, Bagda on 11th to 12th December 2025. The workshop, held at the Satish Dhawan Automobile Workshop Shed, was led by technical experts Mr. Sandip Bhadra and Mr. Supriya Dhara. The workshop was designed to provide in-depth technical knowledge and practical exposure to modern engine technologies and advanced chassis systems used in contemporary vehicles. The program emphasized industry-relevant concepts, enabling students to connect theoretical learning with real-world automotive engineering applications. This workshop was coordinated by Mr. Kalyan Mukherjee, TIC, Department of Automobile Engineering, DSCSITSC.

Background:

Rapid developments in the automotive industry, including stricter emission regulations, fuel efficiency demands, and enhanced vehicle safety requirements, have significantly transformed engine and chassis design. Modern vehicles now integrate advanced fuel injection systems, electronic engine management, lightweight materials, and sophisticated chassis architectures. For ITI students, understanding these

advanced concepts is essential for successful careers in service centers, manufacturing units, and automotive research facilities. This workshop was developed to introduce students to evolving engine technologies and modern chassis systems, combining conceptual clarity with practical demonstrations.

Objective:

The main objectives of the workshop were as follows:

- To provide advanced knowledge of modern internal combustion engine technologies.
- To explain engine performance enhancement techniques and emission reduction strategies.
- To familiarize students with contemporary chassis systems and their functional requirements.
- To develop practical understanding of vehicle stability, safety, and ride comfort systems.
- To strengthen diagnostic, maintenance, and analytical skills among ITI students.
- To prepare students for industrial training and professional automotive roles.

Overview of the Workshop:

During the workshop, the following key areas were covered:

- Day 1 – 11th December 2025
  - Introduction to types of IC engines, their classification, and applications.
  - Explained the working cycles of four-stroke and two-stroke engines, differences between SI and CI engines, and key components such as the piston, crankshaft, carburetor, fuel injector, and cooling and lubrication systems.
  - Live demonstration of a cut-section engine model helped students visualize the motion of components and understand valve timing, compression, and the role of fuel-air mixture preparation.
  - Discussed the performance parameters such as brake power, thermal efficiency, fuel consumption, and compression ratio.
  - Observed basic servicing operations including spark plug inspection, fuel filter cleaning, and lubrication checks.
- Day 2 – 12th December 2025
  - Focused on advanced chassis systems that ensure vehicle stability, safety, and comfort.
  - Introduced the modern suspension systems such as independent suspension, multi-link setups, and adaptive suspension technologies
  - Explained advanced braking systems, including disc brakes, ABS, EBD, and brake

assist systems.

- ❖ Demonstrations highlighted brake inspection procedures, fault identification, and the importance of braking efficiency.
- ❖ Discussed steering systems, covering electric power steering, steering geometry, and wheel alignment concepts.
- ❖ Discussed lightweight chassis materials, structural safety, crashworthiness, and the integration of chassis systems with powertrain components.

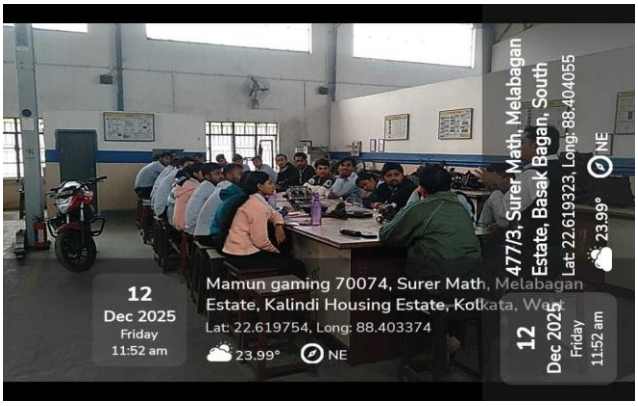
Learning Outcomes:

By the end of the workshop, the participating students were able to:

- ➢ Understand advanced engine technologies and their operational principles.
- ➢ Explain methods used to improve engine performance and reduce emissions.
- ➢ Identify and describe modern chassis systems and their functions.
- ➢ Analyze vehicle stability, safety, and comfort-related factors.
- ➢ Apply diagnostic and maintenance concepts to real-world vehicle systems.
- ➢ Develop confidence in handling advanced automotive engineering topics.

Conclusion:

The Two-Day Workshop on Advanced Engine & Chassis Engineering proved to be highly beneficial for 1st and 2nd Year ITI Students of Harichand Guruchand Government ITI College, Bagda. It enhanced their technical competence, practical understanding, and awareness of modern automotive technologies. The balanced combination of theoretical discussions and practical demonstrations helped students gain industry-oriented skills. The workshop concluded successfully with positive feedback from participants, reinforcing the importance of such advanced training programs in shaping skilled automotive professionals.



Two-Day Workshop on Advanced Engine & Chassis Engineering conducted by the Department of Automobile Engineering for 1st and 2nd year ITI Students (Motor Mechanic) of Harichand Guruchand Government ITI College, Bagda from 11th to 12th December 2025