# Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex

## Report on the Two-Day Workshop on Engine Performance, Emission Analysis & Vehicle Chassis Systems

**Topic:** Two-Day Workshop on "Engine Performance, Emission Analysis & Vehicle Chassis Systems"

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

**Organized for:** 3rd Year Diploma Students, Mechanical Engineering Department, Gaighata Government Polytechnic College, Gaighata.

**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:** 9th December to 10th December 2025

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

**Venue:** Satish Dhawan Automobile Workshop Shed

**No. of Participation:** 28

**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 "Engine Performance, Emission Analysis & Vehicle Chassis Systems" for 3rd year diploma students of Gaighata Government Polytechnic College, Gaighata on 09th and 10th 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 aimed to strengthen students' practical understanding of engine behavior, pollution measurement, and vehicle chassis components. Through demonstrations and interactive sessions, the program helped students connect theoretical concepts with real-world automotive applications. This workshop was coordinated by Mr. Kalyan Mukherjee, TIC, Department of Automobile Engineering, DSCSITSC.

**Background:**

With advancements in automotive engineering and the implementation of strict emission norms, understanding engine performance and pollution control has become essential for students. Similarly, knowledge of chassis systems is critical for ensuring safety, comfort, and vehicle stability. Diploma students need strong practical exposure to prepare for service centers, manufacturing units, and

automotive workshops. This workshop was structured to cover three vital areas: evaluating engine performance parameters, analyzing vehicle emissions using modern diagnostic tools, and identifying the components and functioning of major chassis systems. Experienced resource persons guided students through hands-on modules, demonstrations, and discussions aligned with industry practices.

**Objective:**

The main objectives of the workshop were as follows:

- To provide in-depth knowledge of engine performance indicators and testing methods.
- To familiarize students with emission testing equipment and pollutant measurement procedures.
- To explain the relevance of BS-IV and BS-VI emission norms.
- To offer practical exposure to vehicle chassis systems such as suspension, brakes, steering, and transmission.
- To help students develop diagnostic and maintenance skills for automotive service environments.
- To promote safety awareness and professional discipline in workshop practices.

**Overview of the Workshop:**

During the workshop, the following key areas were covered:

- Day 1 – 09th December 2025
    - Introduction to engine performance parameters, including brake power, indicated power, thermal efficiency, fuel consumption, torque, and compression ratio.
    - Study the cut-section engine models, trainers demonstrated the movement of pistons, valves, and crank mechanisms.
    - A practical demonstration on engine tuning and servicing highlighted spark plug inspection, air filter maintenance, and fuel system checks.
    - Explained the formation of CO, HC, $NO_x$, and soot particles during combustion.

- Day 2 – 10th December 2025
    - Introduce the suspension systems, covering coil springs, leaf springs, shock absorbers, trailing arms, and stabilizer bars.
    - Explained brake systems, including hydraulic brakes, brake bleeding, disc and drum brakes, and ABS fundamentals.
    - Covered steering systems, explaining rack and pinion mechanisms, steering geometry, toe alignment, caster, and camber.

**Learning Outcomes:**

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

- Understand key engine performance indicators and their practical relevance.

- Measure and interpret emission levels using diagnostic equipment.
- Explain pollution control technologies used in modern vehicles.
- Identify chassis system components and describe their working principles.
- Diagnose common issues in suspension, brakes, and steering systems.
- Follow workshop safety practices and use tools confidently.
- Connect theoretical learning with real vehicle systems and service procedures.

**Conclusion:**

The Two-Day Workshop on Engine Performance, Emission Analysis and Vehicle Chassis Systems was highly beneficial for the third-year Diploma students of Gaighata Government Polytechnic College, Gaighata. It strengthened their technical foundation, enhanced hands-on skills, and improved their confidence in diagnosing and maintaining vehicle systems. The workshop received positive feedback from students and reinforced the importance of practical training in preparing them for careers in the automotive industry.



Two-Day Workshop on Engine Performance, Emission Analysis & Vehicle Chassis Systems conducted by the Department of Automobile Engineering for 3rd-Year Diploma Students (ME) of Gaighata Government Polytechnic College from 8th to 9th December 2025