

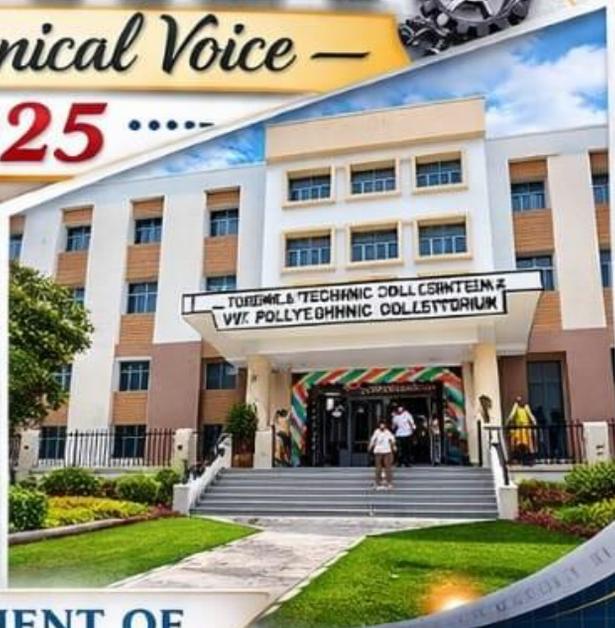
**GOVERNMENT POLYTECHNIC**  
**WEST CHAMPARAN**



# YANTRA

*The Mechanical Voice*

..... **2025** .....



DEPARTMENT OF

## MECHANICAL ENGINEERING

**Government Polytechnic**

*West Champaran, Bihar*





Govt. of Bihar  
Department of Science s Technology

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**

## **Institute Vision and Mission**

### **Vision**

To emerge as a premier institute of technical education committed to producing competent, innovative, and socially responsible diploma engineers who contribute to technological advancement and societal progress.

### **Mission**

To deliver quality, industry-integrated technical education that nurtures innovation, ethical values, entrepreneurship, and social responsibility, producing competent technocrats who contribute to technological and societal development.



Govt. of Bihar  
Department of Science s Technology

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**

## **Department Vision and Mission**

### **Vision**

To be a leading center of excellence in mechanical engineering education that produces skilled, innovative, and responsible diploma engineers capable of contributing to technological advancement, industrial growth, and societal development.

### **Mission**

- 1.To impart quality education in mechanical engineering through a balanced blend of theoretical knowledge, practical training, and industry exposure.
- 2.To cultivate creativity, analytical thinking, and problem-solving abilities that prepare students to meet emerging challenges in the mechanical and manufacturing sectors.
- 3.To instill professional ethics, teamwork, and lifelong learning habits for the holistic development of students and their meaningful contribution to society.



Govt. of Bihar  
Department of Science s Technology

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**

## **PROGRAM OUTCOMES (POs)**

1. Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
2. Problems analysis: Identify and analyze well-defined engineering problems using codified standard methods.
3. Design/development of solutions: Design solutions for well-defined technical problems and assist with the design of system components or processes to meet specified needs.
4. Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
5. Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.



Govt. of Bihar  
Department of Science s Technology

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**

## **PROGRAM OUTCOMES (POs)**

6. Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

7. Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.



Govt. of Bihar  
Department of Science s Technology

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**

**Principal's Message**



**Dr. Bibekanand Pathak**  
Principal in Charge

**Education is a valuable resource, with students, parents, teachers, and the government as its key stakeholders. I remain committed to supporting quality education and ensuring overall satisfaction for all.**

**The Mechanical Engineering Department plays a vital role in shaping skilled and innovative engineers who contribute to the growth of industry and society.**

**I appreciate the efforts of the faculty and students for their dedication, hard work, and enthusiasm in bringing out this magazine. Such initiatives not only showcase achievements but also encourage knowledge sharing and innovation.**

**I extend my best wishes to the Mechanical Engineering Department for continued success and excellence in the years to come.**



**Govt. of Bihar**  
**Department of Science s Technology**

**GOVERNMENT POLYTECHNIC, WEST CHAMPARAN**



**Mr. Alok Kumar**  
HOD of Mechanical Department

**It gives me immense pleasure to present the inaugural edition of the Mechanical Engineering Department magazine, “YANTRA” This magazine reflects the collective efforts, creativity, and achievements of our students and faculty.**

**The Department of Mechanical Engineering is committed to providing quality education with a strong emphasis on practical knowledge, innovation, and skill development. We continuously strive to equip our students with the technical expertise and professional values required to excel in their careers.**

**I sincerely appreciate the hard work and dedication of all contributors who made this publication possible.**

**I hope this magazine will inspire students to explore new ideas, enhance their skills, and achieve greater heights in the future.**

# INTRO OF MECHANICAL- GENIUSES



**Mr. Azazullah**

*M.tech (Mechanical)*

- Academic Project Coordinator

**Mr. Shiwa Jee Gond**  
*B.Tech (Mechanical)*  
*M.tech(Thermal Engg.)*  
*Ph.D- Pursuing*



# INTRO OF MECHANICAL GENIUSES



**Mr. Chandra Shekhar  
Kumar**  
B.Tech Mechanical (NIT  
Jamshedpur)



**Mr. Rajan Kumar**  
B.Tech Mechanical



**Mr. Manoj Kumar Bhakta**  
B.Tech Mechanical

# TPO CELL



**KUMAR SUSHEEL**

The **Training & Placement Office (TPO)** of Government Polytechnic, West Champaran helps students become industry-ready by developing their technical and soft skills.

It organizes training, workshops, industrial visits, and internships, and supports students in resume building and interview preparation. The TPO also connects students with companies for campus placements.

Overall, it plays a key role in guiding students towards a successful career.

# LAB INSTRUCTORS



**Mani Bhushan  
Kumar**



**Rupesh Kumar**



**Vikash  
Kumar**



**Manoranjan  
Kumar Yadav**



**Sajid Anwar**

# LABS

## ENGG. MECHANICS



**SIMPLY SUPPORTED BEAM**



**PARLLELOGRAM LAW**



**UNIVERSAL FORCE TABLE**



**JIB CRANE APPARATUS**



**BELT DRIVE**

# LABS

## FLUID MECHANICS



**CENTRIFUGAL PUMP**



**BERNOULLIS APPARATUS**



**PIPE FRICTION**



**SIMPLY SUPPORTED BEAM**



**SIMPLY SUPPORTED BEAM**

# LABS

## MATERIAL TESTING



**DIGITAL SPRING TESTING**



**IMPACT TESTING MACHINE**



**UTM**



**TENSILE TESTING MACHINE**

# LABS

## IC ENGINE & THERMAL



**LANCASHIRE BOILER**



**AIR COMPRESSOR**



**SC 4 STROKE DIESEL ENGINE**



**2 STROKE IC ENGINE**



**SC 4 STROKE PETROL ENGINE**

# LABS

## 3D PRINTING (COE)



**SLA PRINTING**



**FDM PRINTING**



**SMALL CNC**



# LABS

## ENGG. WORKSHOP



**SHAPING MACHINE**



**SURFACE GRINDER**



**DRILLING MACHINE**



**ARC WELDING**



**HAND SHEARING MACHINE**

# CELEBRATION

## VISHWAKARMA PUJA



# CELEBRATION

## INDEPENDENCE DAY



# CELEBRATION

## TEACHER'S DAY



# AWARENESS

## ENVIRONMENT ACTIVITY



# TRAINING

## CIPET HAJIPUR





# GOVERNMENT POLYTECHNIC WEST CHAMPARAN

## Placement Details

SI NO.	PARTICULARS	2023-24	2024-25
01	No. of Job Offers Made	72	48
02	Highest Package (RS. In LPA)	03	2.5
03	Average Package (RS. In LPA)	2.6	2.6
04	Participating Companies	10	08

# COLLEGE

## COLLEGE VIEW



## Editor's Words



**It gives me immense pleasure to present “YANTRA,” the magazine of the Mechanical Engineering Department. This magazine reflects innovation, creativity, and the technical spirit of our students and faculty.**

**“YANTRA” is not just a publication, but a platform where ideas take shape and knowledge is shared. It showcases the achievements, talents, and aspirations of our department, highlighting the continuous efforts towards excellence.**

**Working on this magazine has been a great learning experience for me, and I am grateful to all the contributors and faculty members for their valuable support.**

**I hope “YANTRA” will inspire readers to think creatively, explore new possibilities, and move forward with confidence.**



2023-ME-12

# Lathe Machine

A **lathe machine** is one of the most important machines used in mechanical workshops. It is mainly used to **shape metal or wood into round objects**.

In a lathe machine, the **workpiece rotates** and a **cutting tool removes material** from it to give the desired shape.

## Main Parts of Lathe Machine

- **Bed** - Base of the machine
- **Headstock** - Holds and rotates the workpiece
- **Tailstock** - Supports the other end of the work
- **Carriage** - Moves the cutting tool

## Common Operations

- Turning
- Facing
- Drilling
- Thread cutting

## Uses

Lathe machines are used to make **shafts, bolts, screws, pipes, and many round components**.

## Conclusion

The lathe machine is called the “**mother of all machines**” because many other machines depend on the parts made by it. It is very useful in industries and workshops.

# CNC Machine



2023-ME-30

A **CNC (Computer Numerical Control)** machine is a modern machine used to cut, shape, and design materials like metal, wood, and plastic with high accuracy.

In this machine, the work is controlled by a **computer program**, so it works automatically with very less human effort.

## How it Works

The operator gives instructions in the form of a **program (code)**, and the machine follows those instructions to perform the work step by step.

## Main Parts of CNC Machine

- **Computer Controller** - Controls the machine
- **Machine Tool** - Performs cutting operation
- **Control Panel** - Used to input commands
- **Drive System** - Moves the tool

## Advantages

- High accuracy and precision
- Saves time and labor
- Can produce complex shapes easily
- Less chance of human error

## Conclusion

CNC machines are very important in modern manufacturing because they make production **fast, accurate, and efficient**.

# Steam Boiler



2023-ME-55

A steam boiler is a device used to heat water and convert it into steam by using heat energy.

The steam produced is used to run machines, generate electricity, and in industries.

## How it Works

Water is filled inside the boiler and heated by burning fuel like coal, gas, or oil. When the water gets heated, it changes into steam, which is then used for different purposes.

## Main Parts of Steam Boiler

- **Boiler Shell** - Main body where water is stored
- **Furnace** - Where fuel is burned
- **Water Level Indicator** - Shows water level
- **Safety Valve** - Prevents excess pressure
- **Steam Outlet** - Takes out steam

## Types of Boilers

- Fire Tube Boiler
- Water Tube Boiler

## Uses

Steam boilers are used in:

- Power plants
- Factories
- Textile industries
- Food processing units

# Drilling Machine



2023-ME-35

A **drilling machine** is a tool used to make holes in different materials like metal, wood, and plastic. It works by rotating a cutting tool called a **drill bit**, which cuts the material and creates a hole.

## How it Works

The drill bit rotates at high speed and is pressed against the material. As it rotates, it removes material and forms a hole.

## Main Parts of Drilling Machine

- **Base** - Supports the machine
- **Column** - Vertical support
- **Drill Head** - Contains motor and spindle
- **Spindle** - Rotates the drill
- **Drill Bit** - Cutting tool

## Types of Drilling Machines

- Hand Drill Machine
- Bench Drill Machine
- Radial Drill Machine

## Uses

Drilling machines are used in:

- Workshops
- Construction work
- Manufacturing industries

## CNC Milling



2023-ME-24

**CNC Milling (Computer Numerical Control Milling)** is a modern machining process in which a rotating cutting tool removes material from a workpiece to create precise shapes and components. The entire operation is controlled by a computer program, ensuring high accuracy and repeatability. In CNC milling, the workpiece is fixed on a table, and the cutting tool moves along multiple axes (X, Y, and Z) to perform operations such as cutting, drilling, slotting, and shaping. This process is widely used in manufacturing industries for producing complex parts with tight tolerances.

### Applications

- Automobile parts manufacturing
- Aerospace components
- Die and mold making
- Engineering and production industries

**CNC Milling** plays a crucial role in modern manufacturing by improving productivity, accuracy, and overall product quality.

# OUR TEAM MEMBERS



**SHREENARAYAN  
KUMAR**



**DEEPAK KUMAR**



**ABHISHEK KUMAR**



**AYUSH KUMAR**

# OUR TEAM MEMBERS



**ALOK KUMAR**



**AMRIT RAJ**



**SHUBHAM KUMAR**

# YANTRA 2025

*The Mechanical Voice*

## About Department

The Department of **Mechanical Engineering** at Government Polytechnic, West Champaran is committed to excellence in technical education, innovation, and skill development. We aim to nurture future engineers with practical knowledge and industry-oriented training.

## Message from HOD / Principal

“It gives me immense pleasure to present ‘YANTRA 2025’. This magazine reflects the creativity, technical skills, and dedication of our students and faculty.”

**Government Polytechnic,  
West Champaran, Bihar**

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