



**BOSCH REXROTH INTERNSHIP**  
**SWAMI VIVEKANANDA UNIVERSITY**  
**INVITES**  
**SUMMER INTERNSHIP**  
**ON**  
**INDUSTRY-ORIENTED BASIC**  
**HYDRAULICS AND SYSTEM**  
**APPLICATIONS**  
**POWERED BY**  
**BOSCH REXROTH**  
**A BOSCH COMPANY**



**BOSCH Rexroth Internship**  
SWAMI VIVEKANANDA UNIVERSITY INVITES

**Summer Internship powered by BOSCH Rexroth  
on  
Industry-Oriented Basic Hydraulics and System Applications**




**Eligibility for the Internship:**  
Students pursuing ITI, Diploma, B.Tech and M.Tech in:  
Mechanical, Automation, Mechatronics, Robotics,  
Material Science, Production Engineering  
and  
For Industry Professionals

**Key Benefits of the Program:**

- Gain hands-on experience with hydraulic automation and real-world circuit design.
- Develop skills in system components, troubleshooting, and safety protocols of hydraulic automation.
- Learn industry-relevant practices through Bosch Rexroth-powered training.
- Understand hydraulics-electronics integration for modern automation.
- Industrial internship requirement as per B.Tech/Diploma curriculum.
- Earn a recognized internship certificate powered by Bosch Rexroth.

**4 Weeks internship**

Date  
Batch 1: May 2 to May 29, 2025  
Batch 2: May 3 to May 30, 2025  
Batch 3: June 2 to June 29, 2025  
Batch 4: June 3 to June 30, 2025  
Batch 5: July 2 to July 29, 2025  
Batch 6: July 3 to July 30, 2025



Limited seats only,  
**Maximum  
20 participants**  
in one batch.

**Registration Fees  
Rs. 1500/-**



**Choose Your Batch & Register Now**

Contact:  
Mr. Soumya Ghosh 8250429409  
Dr. Arnab Das 9038010458  
Dr. Ranjan Kumar 7903332141



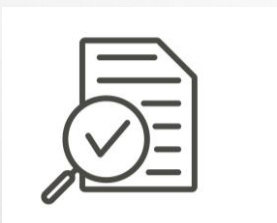
Scan for Register



Scan and Pay the Registration Fees

# Training Proficiency Levels

## 1. Basics



Introduction and Theoretical insights on fundamentals of hydraulics, fluid mechanics, hydraulic components, and hydraulic circuit operation

## 2. Operations



Hands-on practices and Practical sessions on hydraulic Kits, Hydraulic Circuit generation for practical applications using different hydraulic components

## 3. Advancements



Practical Measurement of Several Hydraulic Parameters, Scope of Hydraulic Experiments and Research

# Course Contents

## 1. Basics

*Module 1. Basic  
Hydraulics*

*Module 2. Electronics  
Fundamentals for  
Hydraulic Systems*

**Theory**

+

**Demonstration**



## 2. Operations

*Module 3. Open-Loop  
Hydraulic Systems:  
Design, Control, and  
Optimization*

**Theory**

+

**Practical Session**



## 3. Advancements

*Module 4. Measurement  
& Analysis in Hydraulic  
Systems*

**Theory**

+

**Practical Experiments**

Module	Title	Contact Hours
Module 1	Basic Hydraulics	15 Hours
Module 2	Electronics Fundamentals for Hydraulic Systems	10 Hours
Module 3	Open-Loop Hydraulic Systems: Design, Control, and Optimization	10 Hours
Module 4	Measurement & Analysis in Hydraulic Systems	10 Hours

# Module 1. Basic Hydraulics

## Coverage:

This course introduces the fundamental principles of hydraulics, including fluid mechanics, system components, and hydraulic circuit operation. It covers essential hydraulic elements such as pumps, valves, actuators, and safety measures, providing a foundational understanding for industrial and mobile hydraulic applications.

## Objectives:

By the end of the course, learners will:

1. Understand the **basic physics** behind hydraulic systems and their working principles.
2. Identify and interpret **hydraulic symbols** used in schematics.
3. Gain knowledge of **key hydraulic components**, including pumps, valves, motors, cylinders, and accumulators.
4. Learn the function and selection of **hydraulic oil and accessories**.
5. Understand **contamination control** methods and their impact on system performance.
6. Explore **proportional technology** and its role in modern hydraulic systems.
7. Develop troubleshooting skills for **common hydraulic failures**.
8. Learn and apply **safety protocols** for hydraulic systems.

## Course Content:

- Basic physics and principles of hydraulics
- Pascal's law and fluid dynamics
- Standard hydraulic symbols and schematic interpretation
- Types and functions of hydraulic pumps
- Hydraulic motors and cylinders
- Pressure control valves and their applications
- Directional control valves and flow regulation
- Load holding concepts in hydraulic systems
- Introduction to proportional hydraulic technology
- Hydraulic fluids, types, and additives
- Contamination control and filtration methods
- Heat exchangers, tubes, hoses, and fittings in hydraulic systems
- Hydraulic accumulators and their applications
- Hydraulic system troubleshooting techniques
- Preventive maintenance strategies for hydraulic systems
- Safety protocols and risk assessment in hydraulic operations



# *Module 2. Electronics Fundamentals for Hydraulic Systems*

## **Coverage:**

This course provides hydraulics engineers with fundamental knowledge of electronics, focusing on its application in hydraulic control systems. It covers essential electronic components, control systems, motor operations, and safety practices, helping engineers integrate electrical and hydraulic technologies effectively.

## **Objectives:**

By the end of the course, learners will:

1. Understand the basic principles of electronics and their relation to fluid power systems.
2. Identify and interpret electrical symbols used in circuit diagrams.
3. Learn the working of relays, solenoids, and electronic components in hydraulic control systems.
4. Gain knowledge of control systems, power supply, and motor control techniques.
5. Understand proper cabling and termination methods for safe and efficient system operation.
6. Develop skills in troubleshooting, maintenance, and safety for hydraulic-electronic systems.

## **Course Content:**

- Basic principles of electronics and fluid power analogies
- Electrical symbols and circuit diagram interpretation
- Working of relays and solenoids in hydraulic systems
- Functions and types of electronic components
- Introduction to control systems in hydraulic applications
- Power supply systems and voltage regulation
- Motors and their control methods in hydraulic-electronic systems
- Cables, wiring standards, and termination techniques
- Basic troubleshooting of hydraulic-electronic circuits
- Maintenance strategies for electrical components in hydraulic systems
- Safety procedures in handling electrical systems in hydraulics



# Module 3. Open-Loop Hydraulic Systems: Design, Control, and Optimization

## Coverage:

This course provides an in-depth understanding of open-loop hydraulic systems, covering design principles, component selection, control techniques, and integration with electronic controls. It emphasizes energy efficiency, reliability, and troubleshooting, with hands-on practical demonstrations for assembly, calibration, and safety.

## Objectives:

By the end of the course, learners will:

1. Understand the fundamental principles of open-loop hydraulic circuit design.
2. Learn selection criteria for hydraulic components based on application needs.
3. Explore flow and pressure control techniques for optimizing system performance.
4. Study different types of controllers, their functions, and applications.
5. Develop strategies for energy-efficient, reliable, and maintainable system design.
6. Gain insights into commissioning and optimization of open-loop systems.
7. Learn basic electronic control integration with hydraulic systems.
8. Participate in practical demonstrations, including assembly, disassembly, and calibration.
9. Develop troubleshooting skills for diagnosing and resolving system failures.

## Course Content:

- Principles of open-loop hydraulic circuit design
- Selection criteria for hydraulic components
- Flow and pressure control techniques in open-loop systems
- Types of common controllers, their functions, and applications
- Designing open-loop systems for energy efficiency, reliability, and maintainability
- Commissioning and optimization of open-loop hydraulic circuits
- Basic electronic control integration with open-loop systems
- Practical demonstration on assembly, disassembly, and calibration of hydraulic units
- Safety measures in handling hydraulic components and systems
- Troubleshooting guide for diagnosing and resolving common issues



# *Module 4. Measurement & Analysis in Hydraulic Systems*

## **Coverage:**

This course introduces the fundamentals of measurement technology, focusing on pressure and flow measurement techniques in hydraulic systems. It covers the function and application of various measuring instruments to ensure accurate system analysis and performance evaluation.

## **Objectives:**

By the end of the course, learners will:

1. Understand the fundamental principles of measurement technology in hydraulics.
2. Learn the techniques and tools for pressure measurement in hydraulic systems.
3. Gain knowledge of flow measurement methods and their applications.
4. Explore the function and selection of measuring instruments for hydraulic analysis.
5. Develop skills in analyzing hydraulic performance using measurement tools.

## **Modified Course Content:**

- Basics of measurement technology in hydraulic systems
- Principles and techniques of pressure measurement
- Methods and instruments for flow measurement
- Function and selection of measuring instruments
- Data interpretation and analysis for hydraulic system performance





## ***Examination***

### **Theoretical (MCQ type) + Group Practical**

<b>Marks Distribution</b>	<b>Theory</b>	<b>Practical</b>
100	40	60

Qualifying Marks will be 50% of the Total Marks

***Certificate will be provided only after qualifying the Examination***