

Relay Logic Control & Sensorics

Objectives:

The participants should be able to understand the physical parameters, symbols, construction and functions of various Sensors. The participants should be able to understand the different types of switches. Participants should be able to make circuit using sensors & relays on the training rig.

Content:

- Concept of NO, NC & their Implementation.
- Theories & Practices with Toggle Switch, Push button switch, Limit switch, Selector Switch.
- Working with Relay Logic Control
- Concept of Inching, Latching & Interlocking
- Timer Application Electrical control circuit.
- Design of Automatic Starter Control for motor with Relay Logic Control
- Working principle of different sensors
- Operating range & reduction factor of different sensors
- Automatic forward-reverse of motors using sensors & relays
- Level detection & control using sensors & relays

Duration: 30 Hrs, During 3rd Sem (2.5Hrs X 12 classes)

Evaluation: Theory and Practical Exam

Teaching & Learning Media:

- Multimedia Presentation
- Cut-section & transparent models
- Sample units & power units
- PC Animation & E-learning
- Web-trainers

Registration: Through SSEPL Skills

Industrial PLC

Objectives:

The participants should be able to understand the physical parameters, symbols, construction and functions of various control components. Participants should be able to program of different PLC modules. Participants should be able to read, analyse and understand fundamental PLC programming.

Content:

- Hardware & Software of PLC
- Programming Languages & Configuration of I/O
- Ladder Programming
- Programming using different function blocks like Timer & Counter
- Visualization of program in PC
- Industrial Project with PLC
- Introduction to IEC based operators
- Programming using Analog I/O
- Programming using different IEC languages
- Concept of SCADA & screen design
- Networking concept of PLC
- Project with Universal Simulator

Duration: 30 Hrs, During 4th Sem (2.5Hrs X 12 classes)

Evaluation: Theory and Practical Exam

Teaching & Learning Media:

- Multimedia Presentation
- Cut-section & transparent models
- Sample units & power units
- PC Animation & E-learning
- Web-trainers

Registration: Through SSEPL Skills

Hydraulics, Pneumatics, Electro-Pneumatics & Electro-Hydraulics

Objectives:

The participants should be able to understand the physical parameters, symbols, construction and functions of various Hydraulics & Pneumatics components. Participants should be able to make simple Hydraulic & Pneumatic circuit on the training rig. Participants should be able to read, analyse and understand fundamental of Hydraulic & Pneumatic circuits.

Content:

- Applications of Hydraulic & Pneumatic Technology in industrial Automation
- Advantages & Disadvantages of Hydraulic & Pneumatic System
- Theories & Hands on practices of Various Directional & Pressure control Valves
- Theories & Hands on practices of Flow control Valves, Various Actuators
- Control of Hydraulics & Pneumatics using electrical components
- PLC based control of Hydraulics & Pneumatics
- Detailed discussion on Hydraulics Symbols Simulation Software

Duration: 30 Hrs, During 5th Sem (2.5Hrs X 12 classes)

Evaluation: Theory and Practical Exam

Teaching & Learning Media:

- Multimedia Presentation
- Cut-section & transparent models
- Sample units & power units
- PC Animation & E-learning
- Web-trainers

Registration: Through SSEPL Skills

Mechatronics, Robotics, Proportional Hydraulics & Project

Objectives:

The participants should be able to understand the physical components, working, construction and functions of various Mechatronics components. Participants should be able to Programme the kit on various aspects. The participants should be able to understand the physical parts of Robot, construction and functions of various Robotic components. Participants should be able to write program and operate CMS Robot. Participants should be able to read, analyse and understand fundamental of Robot.

Content:

- Introduction to system design using mechatronics concept.
- Programming of a complex mechatronics system
- Troubleshooting & Corrective actions
- Multi-programming in PLC networking
- Design of SCADA view of a plant
- Introduction to Robotics, Types of Robots and Applications
- Robot Power Transmission Systems.
- Components of CMS Robot
- Determination of Workspace limitation of Robotic kit.
- CMS instructions and Operation through VCP
- Simple axis-movement program via VCP
- Movement program with MOVE, Output Set/Reset
- Movement program with abortion of movement
- Movement program with rounding of the 90-degree turn
- Set output & WAIT for an input before movement is continued
- Introduction to system design using Industry 4.0 concept.
- Programming with 2nd generation PLC
- Concept of closed loop Hydraulics control
- Project work based on mechatronics system design

Duration: 30 Hrs, During 6th Sem (2.5Hrs X 12 classes)

Evaluation: Theory and Practical Exam

Teaching & Learning Media:

- Multimedia Presentation
- Cut-section & transparent models
- Sample units & power units
- PC Animation & E-learning
- Web-trainers

Registration: Through SSEPL Skills