COLLEGE OF ENGINEERING TRIVANDRUM

BOSCH REXROTH CET CENTRE OF EXCELLENCE IN AUTOMATION TECHNOLOGIES

SHORT TERM TRAINING PROGRAMME ON ROBOTICS AND INDUSTRIAL AUTOMATION

Contents	**Drives**: Cylinders for different drive purposes **Valves**: Various valve types (pneumatic/hydraulic/electric controlled) **Controls**: Pneumatic, hydraulic, and electric controls of valves Position control: Limit switches and sensors Speed control: Uses of throttle valves Logic control: AND/OR valves Pressure control: Uses of adjustable pressure sensors Time-dependent control, Symbolic representation of devices, standards Relay Logics, Electro-Pneumatics, Programmable Logic Controllers, Interfacing hydraulic and pneumatic system with PLC, Study of different types of sensors and their application. Hands on Training on Pneumatic, Hydraulic, Electro-Pneumatic circuits, electro hydraulic and Interfacing hydraulic and pneumatic system with PLC. Basics Of CNC programming: G codes and M codes. Advanced programming techniques using • Basic machining cycles • Advanced machining cycles • Canned cycles • Mirroring commands • Subroutines (Subprogram) • Hands on training sessions using Vertical Machining Centre **Robotics**: Introduction - Definitions, Robot Elements - links, joints, end effector, actuators. Robot specifications, Work envelope of different robots, Classification of Robots, Sensors in Robotics- status sensors, environment sensors,quality control sensors, safety sensors, ROS, Lego Programming, Introduction to RobotStudio Software. **Mobile robots:** steered and differentially driven robots. Hands on training on differentially driven robots, quadcopter, manipulator.
Outcomes	The participant: • can design, assemble and test basic pneumatic/hydraulic/electro-pneumatic circuits • can maintain and troubleshoot pneumatic/hydraulic/electro-pneumatic/electro- hydraulic components and basic control systems. • can design, assemble, program and test robotic systems.
Facilities of centre	Hydraulic kit- 6 nos. Pneumatic kit- 6 nos. PLC kit- 6 nos. Sensoric kit- 4 nos. Differentially driven mobile robot – 1 nos. Quadcopter – 1 nos. ABB manipulator – 1 nos. Lego Mindstorms EV3 Kit- 6No. RobotStudio Software.

Duration	120 hours
Timing	Monday, Wednesday& Friday 12.30PM-6.30PM, Saturday-9.00AM- 4.00PM
Eligibility	Degree/Diploma in Mechanical/Electrical/Instrumentation/Electronics Engineering or Allied branches.
Course Fee	Rs.7500/-(Direct Payment Through Centre for Continuing Education, CET or DD drawn in favour of BOSCH-CET CENTRE FOR CONTG EDN Payable at Trivandrum DD and duly filled application form should reach by registered post to The Centre for Continuing Education, College of Engineering Trivandrum pin: 695016 on or before 20/02/2020)
Last Date for Apply	20.02.2020
Date of Commencement	24.02.2020
No. Of Seats per Batch	25
Contact	Dr. Vinod B. R, Co-ordinator, Bosch Rexroth CET Centre of Excellence in Automation Technologies, Assistant Professor, Department of Electronics and Communication Engineering CET, TVM-695016. vinodbrcet@gmail.com, mob: 9447344250 Prof. Shafeek M, Course Co-ordinator,Assistant Professor, Department of Mechanical Engineering, CET, TVM-695016.e-mail: shafeek@cet.ac.in, mob: 9495828145