About the CoE

Punjab Engineering College (Deemed to be University) in collaboration with M/s Siemens Industry software (India) Pvt. Limited (SISW) and its partner M/s MTAB Technology Center Private limited (MTC) established a Center of Excellence (CoE) at PEC. This world-class skill development center is dedicated to the areas of engineering, product development and advanced manufacturing technologies towards the following domains:

Automotive – passenger vehicles, commercial vehicles, Aerospace, Industrial machinery – off highway vehicles, farm equipment and implements, electrical and mechanical machineries, Renewable energy – solar and wind energy, Internet of Things (IOT)

Center of Excellence (CoE) at PEC covers a total area of 16000 square feet. Estimated cost for total project is 156.64 crores.

Shri. V.P. Singh Badnore, Governor of Punjab and the Administrator U.T. Chandigarh and Smt Kirron Kher, MP Chandigarh inaugurated the centre on 17th December in the presence of Dr Dheeraj Sanghi, Director of PEC, Shri Rajinder Gupta, Chairman BoG PEC, Mr. Matthew Thomas, Country Head Siemens, Sashi Sairaman, MD MTC - Executing Partner of Siemens, Dr R.M. Belokar, Program Director CoE and other esteemed officials and guest.

In his welcome address, Dr Dheeraj Sanghi thanked the guests for gracing the occasion and highlighted the benefits of the new facility for the students, faculty and industry. He proudly presented this center of excellence as an instrument to upgrade the present curriculum with the latest technology.

Mr Matthew Thomas, Country head, Siemens substantiated on the importance of the Center of Excellence and said that it will create an ecosystem of innovation and add to the hub for research and academia partnerships. In the world where lines between all fields of engineering are blurring, it will close the skill gap.
Program Director CoE Siemens

Dr. Rajendra M Belokar
Department :- Workshop and Skill Development Centre
Designation :- Program Director CoE Siemens and Head Workshop
Qualification :- Ph.D. Engineering and Technology (Panjab University)
Research Interests :- Manufacturing System Design, Value Engineering, Production and Operations management, TPM, and TQM

Centre Manager CoE Siemens

Amninder Singh
Department :- CoE Siemens
Designation :- Centre Manager
Qualification :- B.Tech in Electronics Engineering from Thapar Institute of Engineering and Technology
<table>
<thead>
<tr>
<th>S.No</th>
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<tbody>
<tr>
<td>1</td>
<td>Product Design and Validation Lab</td>
<td>Dr. Gurjeet Singh</td>
<td>Assistant Professor</td>
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<tr>
<td>2</td>
<td>Advance Manufacturing Lab</td>
<td>Dr. Chanderkant Susheel</td>
<td>Assistant Professor</td>
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<td>3</td>
<td>Automation Lab</td>
<td>Dr. T.S. Saggu</td>
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<td>6</td>
<td>Process Instrumentation Lab</td>
<td>Mr. Tushar Kumar Siag</td>
<td>Assistant Professor</td>
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<td>7</td>
<td>Internet of Things (IOT) Lab</td>
<td>Dr. Sanjay Batish</td>
<td>Head Computer Centre</td>
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<tr>
<td>8</td>
<td>Metrology Lab</td>
<td>Dr. Suman Kant</td>
<td>Assistant Professor</td>
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## PEC CoE Faculty

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<td>Mr. Rajeshwaram</td>
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<td>Renewable Energy Lab</td>
<td>Ms. Amita Kumari</td>
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<tr>
<td>11</td>
<td>Rapid Prototyping Lab</td>
<td>Prof. R.S. Walia</td>
<td>Professor</td>
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<td>12</td>
<td>Robotics Lab</td>
<td>Dr. Tejbir Kaur</td>
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<td>13</td>
<td>CNC Machine Lab</td>
<td>Mr. Rajeshwaram</td>
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<td>14</td>
<td>CNC Controller Lab</td>
<td>Mr. Rajeshwaram</td>
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<td>S.No</td>
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| 1    | Product Design and Validation Lab         | Sanni Dev
         | Pushkar Kumar                  | Senior Trainer Trainer |
| 2    | Advance Manufacturing Lab                 | Ashish Grover           | Senior Trainer     |
| 3    | Automation Lab                            | Arpinder Singh
         | Tarun Mehra                   | Senior Trainer Lab Assistant |
| 4    | Electrical & Energy Saving Lab            | Vishal Sharma
         | Pardeep Sharma                | Trainer Trainer       |
| 5    | Mechatronics Lab                          | Arpinder Singh
         | Tarun Mehra                   | Senior Trainer Lab Assistant |
| 6    | Process Instrumentation Lab               | Arpinder Singh
<pre><code>     | Pardeep Sharma                | Senior Trainer Trainer   |
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<p>| 7    | Internet of Things (IOT) Lab              | Tamizh Selvam           | Senior Trainer     |</p>
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PRODUCT DESIGN AND VALIDATION LAB

Course Offered

- Essentials for NX Designer.
- NX Basic Design.
- NX Synchronous Modeling Fundamentals.
- NX Synchronous Modeling Parametric Design.
- NX Drafting Essentials.
- NX Sheet Metal.
- Motion Simulation.
- Advance Simulation Process.
- Advance Simulation Processes and Solutions.
- NX Nastran Advance Nonlinear.
- Thermal and Flow Analysis.
- CAM Manufacturing Fundamentals.
- CAM Turning Manufacturing Process.
- CAM Fixed And Multi-axis Milling
- NX CAE Intermediate
Skill Gained By Students

- Computer Aided Design for simple and complex Engineering problems.
- Understand existing Industrial Design.
- Statics and Dynamics analysis for various Engineering problems.
- Virtual manufacturing process for various complex designs through NX CAM tool.
Possible industry/sector the students get employed

- Automobile Sector
- Aerospace industries
- Shoes, plastics and sheet metal product industries as a Design Engineer
- Research and Development Engineering
ADVANCE MANUFACTURING LAB

Course Offered

- Advance Manufacturing – Teamcenter
- Advance Manufacturing - Plant simulation
- Advance Manufacturing - Process simulation
- Advance Manufacturing - Robcad
Skill Gained By Students

- Maximize innovation throughout product lifecycle
- Transform the decisionmaking processes
- Minimize lifecycle cost
- 3D simulation
- Assembly and robotic path planning
- Resource modeling (3D and kinematics)
- Human tasks simulation
- Ergonomics analysis
- Robotics process simulation
- Connect virtual model with real PLC code

Possible industry/sector the students get employed

- Automobile Sector
- Industrial Automation
- Aerospace, Space & Defense sector
- Food & Beverage Manufacturing
- Chemical Manufacturing
- Pharmaceutical & Life Sciences
- Appliance Manufacturing
- Electronics & Semiconductors
Tecnomatix Process Simulate
Course Offered
- Simcenter Testlab – Structures & Rotating Machineries
- Simcenter Testlab – Data Acquisition System
- Simcenter Amisim - Thermal Fluid System Simulation
- Simcenter Amisim - Hydraulic System Simulation
- Simcenter Amisim - Transmission System Simulation
- Simcenter 3D- Thermal and Flow Analysis

Skill Gained By Students
- Realtime analysis of Vibration, Noise Force and other parameters.
- Diagnose the system to reduce critical design error.
- Virtually assess and optimize the performance of mechatronic systems.

Possible industry/sector the students get employed
- Automobile sector
- Aerospace industries
- Powerplants
- Manufacturing Industries.
Test and optimization
Lab Equipment
Mobile SCADAS Kit

Signal Amplifier

Aeroplan Scaled Model

Motor For Speed
Shaker Miniature

Vacuum Cleaner for noise detection
ROBOTICS LAB

Course Offered

➢ Introduction to Robotics
➢ Material Handling Robot
➢ ARC welding Robot
➢ Spot welding Robot

Skill Gained By Students

➢ About industrial robots and their applications
➢ About a robotic cell
➢ Layout and robot placement
➢ Robotics Programming
➢ Teach Pendant Programming
➢ Off-Line Programming
➢ Material handling application using robots (Pick and Place).

Possible industry/sector the students get employed

➢ Automobile Sector
➢ Industrial Automation
➢ Aerospace, Space & Defense sector
➢ Food & Beverage Manufacturing
➢ Chemical Manufacturing
➢ Pharmaceutical & Life Sciences
➢ Appliance Manufacturing
➢ Electronics & Semiconductors
Robotics Lab Equipment
MATERIAL HANDLING ROBOT
MATERIAL HANDLING CELL

WORKING RANGE

APPLICATIONS

- Small parts assembly
- Material handling
- CNC machine tending
- Polishing and dispensing
MATERIAL HANDLING CELL
ARC WELDING CELL
ARC WELDING CELL

WORKING RANGE

APPLICATIONS

arc welding
ARC WELDING ROBOT
SPOT WELDING CELL
SPOT WELDING CELL

WORKING RANGE

APPLICATIONS

spot welding

CNC machine tending

material handling
SPOT WELDING ROBOT
CNC MACHINE LAB

Course Offered

- CNC Turning Operation - Basic
- CNC Operation Turning
- CNC Milling operation- basic
- CNC Operation Milling

Skill Gained By Students

- CNC Machine Operation, Tool Offset, Wear Offset, Setting of the CNC job, Loading unloading, Daily & Routine maintenance of CNC Machine
- Resolve issues faced in the moving elements of a CNC Machine (with the guidance of a supervisor)

Possible industry/sector the students get employed

- Manufacturing/Production/Fabrication/ Automotive/General Engineering / Any allied industry using CNC Machines
CNC Machine Lab Equipment
CNC TURNING MACHINE
**APPLICATIONS**
- Automotive components
- Aerospace components
- Electrical and electronics parts
- Oil and gas spares
- Tool rooms

**FEATURES**
- Monoblock casting
- Cartridge type spindle
- 8 station tool turret
- Siemens 828D control
- C3 class preloaded ball screws

**CNC TURNING CENTER**

**TURRET**

**SPINDLE ASSEMBLY**

**TAILSTOCK ASSEMBLY**

**BALLSCREW ASSEMBLY**

**BASE**

**CHUCK**
CNC MILLING MACHINE
Courses offered

- CNC Programming Turning
- CNC Programming Milling
- CNC Turning Machine Commissioning
- CNC Milling Machine Commissioning

Skill Gained By Students

- CNC programming to certain range of applications

Possible industry/sector the students get employed

- Manufacturing/Production/Fabrication/ Automotive/General Engineering / Any allied industry using CNC Machines
CNC Controller Lab Equipment
808D Kit Turning/Milling
840Dsl Simulation Rack Milling
RAPID PROTOTYPING LAB

Course Offered

- 3D Printing  Rapid Prototyping

Skill Gained By Students

- 3D Prototyping printing

Possible industry/sector the students get employed

- Manufacturing
- Production
- Fabrication
- Automotive
- Healthcare

STRATASYS F270
RPT Lab Equipment
STRATASYS F270 PRINTER
Course Offered
- PLC Programming - Basic
- PLC Application - Basic

Skill Gained By Students
- Basics of PLC programs – bit logic, set/reset, timer, counter and operators.
- User will be able to program various real-world applications.
- User will be able to program advanced PLC programming tools.
- User will be able to program the industrial applications in automation.
- User will be able to fault finding and troubleshooting the industrial automation systems.

Possible industry/sector the students get employed
- Automotive / Manufacturing / Automation / Construction / Electrical / Electronics / Heavy Engineering / General Engineering / Process Industries / Power Plant / Oil & Gas Industries
Automation Lab Equipment
SIMATIC S7-1200 & SIMATIC S7-1500 PLC training kits with HMI & WinCC software
PROCESS INSTRUMENTATION

Course Offered

- Basic of Process Instrumentation
- Basic of DCS

Skill Gained By Students

- Selection of transmitters and its applications
- Parameterization of the transmitters
- Design the DCS hardware architecture control panel System
- Advanced level plc Programming

Possible industry/sector the students get employed

- Automotive/Manufacturing/Automation/Electrical/Process Industries
Process Instrumentation
Lab Equipment
Process Instruments Kit
PCS7- TRAINING KIT
METROLOGY LAB

Course Offered

- Basic of Measurement Instruments
- Advance Measurement Instruments

Skill Gained By Students

- Understanding of geometric structures
- Ability to read drawings with tolerances
- Basic knowledge of metrology
- Advance measurement instruments

Possible industry/sector the students get employed

- Automotive/Manufacturing/Automation/Electrical/Process Industries
Metrology Lab Equipment
OPTICAL MICROSCOPE
OPTICAL PROFILE PROJECTOR
HEIGHT GAUGE INSTRUMENT

MICRON MEASUREMENTS
9880777008
GRANITE SURFACE PLATE
RENEWABLE ENERGY LAB

Course Offered

- Solar Power & Photovoltaic System
- Wind Power Generation System

Skill Gained By Students

Storage of electrical energy produced from renewable resources into batteries
DC Power Circuits
- Lead-Acid Batteries
- Solar Power (Photovoltaic)
- Introduction to Wind Power

Possible industry/sector the students get employed

- Solar Energy Power Plant
- Wind Energy Power Plant
Renewable Energy
Lab Equipment
WIND ENERGY KIT
SOLAR PANEL TEST BENCH
WIND TURBINE TEST BENCH
ELECTRICAL AND ENERGY SAVING

**Course Offered**
- LV Switch Gear products, Distribution & Panel
- PAC Meter
- SIMOCODE AC-MOTOR CONTROL
- SINAMICS DC Master 6RA80
- SINAMICS G120 with starter
- SIRIUS Soft Starter

**Skill Gained By Students**
- Participants are trained on basics of AC & DC Motors, Power Electronics Components, Speed control of AC/DC motors with Drives & Parameterization, Motor maintainance/servicing, Product selection based on application requirement, Diagnostic & troubleshooting strategies.

**Possible industry/sector the students get employed**
- Power Plant / Oil & Gas Industries
- Automotive / Manufacturing/ Automation
- Construction / Electrical / Heavy Engineering
- General Engineering / Process Industries
Electrical and Energy Saving Lab Equipment
DC Motors & AC Drives Kits with Induction Motors, Timers & Relays Kit
SINAMICS DC MASTER TRAINER KIT
CIRCUIT BREAKER

Air Circuit Breaker 3WL
Air Circuit Breaker 3WT
Molded case circuit breaker 3VT
Molded case circuit breaker 3VL
SIMOCODE with PAC Meter and Energy Savings Training Kit
MECHATRONICS LAB

Course Offered

- Basic of Pneumatic
- Basic of Electro Pneumatic
- MAPS (Modular Automation Production System) (Design, Programming, Operation, Trouble Shooting)

Skill Gained By Students

- Design of MAPS.
- Programming of MAPS.
- Operation of MAPS.
- Trouble Shooting of MAPS.
- Pneumatic, Electro Pneumatic

Possible industry/sector the students get employed

- Automotive / Manufacturing / Automation
- Construction / Electrical / Electronics / Heavy Engineering
- General Engineering / Process Industries
- Power Plant / Oil & Gas Industries.
Pneumatics - Electro-pneumatics - Hydraulics
Sensor technology - Electrical and electronics circuits
Motor and drive technology - Control technology
PLC programming - Robot handling - Quality inspection
Automation concept, design, assembly - Maintenance and troubleshooting
Mechatronics Lab Equipment
MODULAR AUTOMATION PRODUCTION SYSTEM
INTERNET OF THINGS (IOT) LAB

Course Offered

- Basics of IOT
- Mindsphere Platform introduction
- Mindsphere app development basic
- Mindsphere app development Advance

Skill Gained By Students

- IOT Application, IOT Platform, PLC, Hardware, Sensors, Gateways, Configuration of devices and networks, Coding & De-coding, Mindsphere architecture, Mindsphere security concepts, Mindsphere analytics

Possible industry/sector the students get employed

- Robotics, Packaging, Safety & Security, Quality Control, Manufacturing, Healthcare and Energy Sectors
IOT Lab Equipment
Siemens MindSphere Platform

Applications
MindSphere applications provide asset transparency and analytical insights into machines, plants, fleets and systems.

MindSphere
MindSphere, the open PaaS, gives you scalable, global IoT connectivity and application development with native cloud accessibility.

Connectivity
MindConnect connects products, plants, systems, machines, enterprise applications and legacy databases with a secured plug-and-play collection of Siemens and third-party products.
NANOBOX