The College

PSG College of Technology, a premier institution for engineering education in India, started in 1951 has developed into a centre for advanced studies and research in several areas of engineering, technology, applied sciences and management. The college is autonomous since 1978 and is certified by ISO 9001:2008. The laboratories, workshops and library of the college are all well equipped with modern facilities.

Metrology Laboratory

The metrology laboratory in the Department of Production Engineering has been set up with the aim of catering to the needs of researchers and industry. With this aim laboratory is being upgraded with the state of the art equipment continuously.

Instruments Available

- Coordinate measuring machine (CMM)
- Electronic height master
- Auto collimator
- Optical profile projector
- Tool maker’s microscope
- Electrical, pneumatic & electro pneumatic Comparators
- Surface roughness tester
- Dial gauge tester
- Michelson interferometer
- Monochromatic light source
- Gear composite error testing machine
- Gauge blocks, angle gauges and other basic measuring instruments

Coordinate Measuring Machine (CMM)

Mass Production and precision manufacturing demands measuring instruments with capability to provide measurements which are precise and compatible with CAD platforms. This requires the power of software which is not inbuilt in most of the conventional instruments. Coordinate Measuring Machine (CMM) is a measuring machine incorporated with software which can measure the dimension of intricate shapes and features fulfilling the Geometric Dimensioning & Tolerancing (GD&T) requirements of industry. Industries in manufacturing sector have already started using CMMs in large number. Use of CMM for the above purpose requires a complete knowledge on the operation of CMM, selection of right probe for a particular application, GD&T features and CAD packages. This course is conducted to provide hands-on training to the students of mechanical engineering / manufacturing engineering, faculty members and practising engineers from industry on dimensional metrology, CAD and coordinate metrology.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Full Time</th>
<th>4 Weeks</th>
<th>9.00am to 4.30pm</th>
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</thead>
<tbody>
<tr>
<td>Part Time</td>
<td>5 Weeks</td>
<td>5.00pm to 7.30pm</td>
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Hands-on Training in Coordinate Measuring Machine (CMM) and Dimensional Metrology

CAD/CAM Centre
PSG COLLEGE OF TECHNOLOGY
(ISO 9001:2008 Certified)
Coimbatore-641004

For further information contact:
PSG Centre for Non-formal and Continuing Education Cell-New Admin Block
Phone: 0422 – 4344448
Fax : 0422 – 2573833
E-Mail: psgcncel@mail.psgtech.ac.in
CAD/CAM Centre-Y-Block (3rd Floor)
Phone: 0422 – 4344147
Course Coverage

Dimensional metrology
- Calibration of measuring instruments and evaluation of measurement uncertainty
- Evaluation of repeatability & reproducibility
- Surface roughness evaluation
- Form measurement
- Dimensional measurement using electronic height master
- Basics of GD&T, limits, fits & tolerance

CAD modeling
- Solid modeling
- Import/Export of CAD models
- Reverse engineering techniques
- Advanced features for reverse engineering

Coordinate metrology
- Introduction to CMM & its specifications
- Introduction to MCOSMOS v4.1
- Coordinate System
- Modes of operation
- Probe data management/Calibration
- Plane selection & creation of datum
- Basic measurements
- Manual / Automatic programming
- 2D comparison
- Report generation
- Contour profile measurement
- Import/Export of CAD models
- Automatic path generation
- Nominal to actual comparison
- Hands-on tutorials in CMM

Make the participants familiar with the use of surface roughness measuring instrument.
Perform form measurements using basic measuring instruments.
Train the participants to use electronic height master to measure various dimensions.
Provide training in solid modeling using CREO 3.0.
Create awareness among manufacturing engineers on the latest developments in coordinate metrology and highlight the features and applications of CMMs.
To enable the student calibrate the probe.
Enable the participants to operate CNC CMM and use its software for dimensional measurement, form measurement, comparison of nominal and actual dimension and to do reverse engineering from the cloud points obtained using CMM.

Key take aways

At the end of the course the participants will be able to
- Apply and interpret the concepts like limits, fits, tolerance and GD&T representation in manufacturing related documents.
- Calibrate the measuring instruments and evaluate measurement uncertainty as per standard procedure and handle sophisticated measuring instruments like various types of comparators, electronic height master, auto collimator, profile projector, Tool maker’s microscope, monochromatic light source and Michelson interferometer.
- Model solids/any component, import and export CAD models, use advanced features in surface modeling and reverse engineering of objects.
- Calibrate probe, operate CNC-CMM, perform various types of measurements, compare the actual and nominal dimensions and generate reports for the measurements made.

OTHER COURSES CONDUCTED

(Full Time and Part Time)
- CAM simulation, CNC programming and Hands-on training in 3-axis VMC
- Advanced CNC programming and operations including CREO CAM
- Diploma in CAD/CAM/CAE using CREO/CATIA/NX
- Design, Assembly, Drafting and Manufacturing using CREO
- Design, Assembly, Drafting and Manufacturing using CATIA
- Design, Assembly, Drafting and Manufacturing using NX
- Master CAM
- Finite Element Analysis using ANSYS
- Finite Element Analysis using Hyper Works