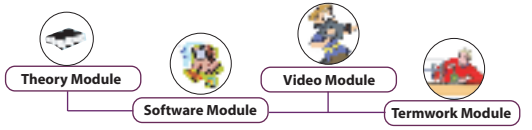
Learning Resources

Learning/Training Resources with Computer Aided Instructions in subject of

Mechanical Measurements

SoftTech ENGINEERS PVT.LTD. Introduces, Global e-Learning System in Education & Training in the form of Learning Resources with Computer Aided Instructions



System Requirement:- IBM-PC Compatible with Window-OS, 128 MB RAM/Multimedia Kit

Theory module

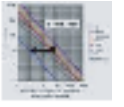
Features : Theory, Figures, Photographs, Animations with controller, Highlighter tool, Note creation facility, Systematic page navigation, Printing facility.

List of Topics

General Concepts

Need and classification of measurements and instruments; basic and auxiliary functional elements of a measurement system; Mechanical versus electrical / electronic instruments; primary, secondary and working standards.

Static and Dynamic Characteristics of Instruments



Range and span, accuracy and precision, calibration, hysteresis and dead zone, sensitivity and linearity, threshold and resolution; speed of response, lag, fidelity and dynamic error, dead time and dead zone. Zero, first and second order systems and their response to step, ramp and sinusoidal input signals.

Errors in Measurement

Sources of errors, systematic and random errors; statistical analysis of test-data, probable error and probability tables, ejection of test data; curve fitting, error propagation; Design and planning of experiments and report writing.

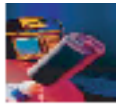
Metrology

Line, end and wavelength standards; linear measurements - vernier scale and micrometer, vernier height gauge and depth guage; comparators - their types, relative merits and limitations; Angular measurements - sine bar, clinometer, angle guage; concept and measurement of straightness and flatness by interferometry

Functional Elements

Review of electro-mechanical sensors and transducers - variable resistance, inductance and capacitive pick ups, photo cells and piezo-electric transducers and application of these elements for measurement of position / displacement, speed / velocity / acceleration, force and liquid level. Resistance strain guages, guage factor, bonded and unbonded guages,

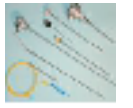
Pressure and Flow Measurement



Bourdon tube, diaphragm and bellows, vacuum measurement - Mcleod guage, thermal conductivity guage and ionisation guage; Dead weight guage tester. Electromagnetic flux meters, ultra-sonic flow meters and hot wire anemometer: flow visualisation techniques.

Temperature Measurement

Thermal expansion methods - bimetallic thermometers, liquid-in-glass thermeter and filled-in-system thermometers; thermo-electric sensors - common thermo couples, reference junction considerations,.



Speed, Force, Torque and Shaft Power Measurement

Mechanical tachomaters, vibration reed tachnometer and stroboscope; proving ring, hydraulic and pneumatic load cells, torque on rotating shafts; Absorption, transmission and driving dynamo meters.

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