Course Title: APPLIED INDUSTRIAL METROLOGY

Course Code: MET 101

Course Background / Summary:

In short, metrology is the science and practice of measurement. In the manufacturing industry, metrology applies to all types of measurements. Measurements are done in many places, for different purposes ranging from the clinical test in the medical laboratory, the electricity meter, the process control instrumentation in the food industry, frequency spectral analysis in telecommunications, pollution measurements in environmental protection to the micrometer in the mechanical workshop, just to mention but a few major areas. Applied Industrial Metrology is concerned with the application of measurement science to manufacturing and other processes, ensuring the suitability of measurement instruments, and their calibration as well as quality control of measurements.

Course Objectives:

- Describe the concept of applied or industrial metrology;
- Justify the needs of metrology in manufacturing industry;
- Classify major types of measurement methods and measuring instruments used for industrial metrology
- Perform measurements of various parameters through the use of metrological instruments.

Target Audience:

- Technicians, Supervisors, Quality Practitioners, Quality Inspectors, Metrologists, Technologists, Engineers, Instructors, Trainers and Lecturers.

Course Duration: 3 Days

Course Contents

1.0 Definition and Applications of Metrology

2.0 Measurement Underlies Human Activities

3.0 The Importance of Metrology in Manufacturing Industry

4.0 Standard System of Measurement

5.0 Geometric Dimensioning & Tolerancing (GD&T)

6.0 Classification of Measurement Methods and Measuring Instruments

7.0 Dimensional Metrology

8.0 Measurement with Scaled Instruments

9.0 Measurement with Gauging Devices

10.0 Optical Metrology

11.0 Surface Finish Measurement

12.0 Measurement through Coordinate Measuring Machine (CMM)

13.0 Measurement System Analysis (MSA) and Gauge Repeatability & Reproducibility (GR&R)