

Scope of IMEKO Technical Committees (TC)

- TC1 **Education and Training in Measurement and Instrumentation**
Concerned with all matters of education and training of professional scientists and engineers for measurement and instrumentation including curricula, syllabuses and methods of teaching as well as the nature and scope of measurement and instrumentation as an academic discipline.
- TC2 **Photonics**
Modern optical measuring techniques in its development (theory, bases and application), which are based on the detection and/or observation of an Interaction of photons or electromagnetic radiation with an Item under test. Main areas: spectroscopy, interferometry, modulating techniques, structured illumination techniques, image sensing, confocal measurements, wave front sensors, deflectometric measurement.
- TC3 **Measurement of Force, Mass and Torque**
Developments and achievements in the measurement of force, mass, torque and related quantities. It covers all areas from industrial applications and new transducers to improvements of the scales for the different quantities, the realisation of new standards and fundamental research.
- TC4 **Measurement of Electrical Quantities**
Theoretical and practical aspects of the measurement of electrical quantities by electronic instruments. Electrical and electronic measuring techniques and principles of implementation of information and communication technology for measurement and enhancement of accuracy.
- TC5 **Hardness Measurement**
Current state and further development of the measurement of hardness, dissemination of measurement principles and techniques, organisation of international scientific events dedicated to hardness measurement, improvement of industrial applications of hardness measurement, implementation of a forum for international collaborations and joint activities of metrologist, scientist and industries, promotion of the use of international standards relevant to the measurement of hardness.
- TC7 **Measurement Science**
Develop, disseminate and implement measurement science both nationally and internationally. Subject areas include: measurement uncertainty, measurement in soft systems, epistemology of measurement, generic techniques for design of measurement systems, models in measurement, formal theories of measurement, semiotics of measurement, measurement of non-physical quantities, intelligent measurement, emerging challenges and novel concepts of measurement science.
- TC8 **Traceability in Metrology**
Basic terms and definitions related to traceability, evaluation of measurement results, traceability requirements for national metrology institutes, statement and evaluation of traceability, evaluation of the results obtained in inter-laboratory comparisons, new fields and needs for traceability.
- TC9 **Flow Measurement**
Measurement of the quantity of flowing fluids and gases, even energy, calibrations and calibration facilities, traceability issues, custody transfer, quality control of measurement facilities, uncertainty, laboratory tools, instrumentation, numerical simulation, flow visualisation, flow conditioning, practical experience with existing measuring methods, and specific metering principles, e.g. turbine meters, ultrasonic meters, orifice plates, etc.

- TC10 **Technical Diagnostics**
Scientific and technical information on diagnostic methods, instrumentation and systems. Areas include: electrical and mechanical systems, Non-destructing, non-invasive testing using innovative sensor and signal processing concepts, Signal and model based techniques, unified diagnostic methods and components of diagnostic systems, Safe and reliable operation of complex systems, Fuzzy- or AI-techniques, if no modelling is possible.
- TC11 **Metrological Infrastructures**
Development, establishment and operation of institutions and services concerned with measurement standards, measuring instruments, calibration, metrological assurance, certification and accreditation, taking into account the specific economic, social and educational needs of individual countries with special emphasis on developing countries.
- TC12 **Temperature and Thermal Measurements**
Temperature and thermal measurements, main trends of research, development and applications, sensors and new measurement methods, instrumentation for temperature and thermal measurements, accurate measurements and improvement of efficiency in scientific, industrial, environmental and medical applications.
- TC13 **Measurements in Biology and Medicine**
Measurement of whole body, organ and cellular functions, sensing and measurement of physical variables, electrical, chemical and nuclear sensing and measurement. Medical imaging: measurements and image processing and interpretation, measurements in diagnostic imaging and measurements in x-ray and related therapies. Medical information systems: information processing within doctor/patient control loop for diagnostics, decision making and patient management, diagnosis and medical decision making, knowledge-based systems, information handling in the clinical laboratory, intelligent instrumentation in medicine and healthcare.
- TC14 **Measurement of Geometrical Quantities**
Dimensional metrology in production, laser metrology for precision measurement, quality management.
- TC15 **Experimental Mechanics**
- TC16 **Pressure and Vacuum Measurements**
Main fields include: traceability and dissemination in pressure metrology, related instrumentation and methods, application in process industry, automotive industry, health and food sectors, promotion, uncertainty evaluation, related standards, etc.
- TC17 **Measurement in Robotics**
Robot sensors and sending, both internal and external ones, such as force sensor, tactile sensor, distance sensor, visual sensor and others, employed in robot motion and navigation control-principle, methodology and applications. Communication sensors interfacing between man and robot. System integration and robot applications.
- TC18 **Measurement of Human Functions**
Various aspects relevant to measurement, analysis and modelling of human functions - movement, perception and cognition: human movements and actions, human perception and cognition: vision, auditory and somatosensory systems, space and motion perception, attention and performance, etc. Also related fields: human interface, brain sciences, rehabilitation and welfare, sports science, human factors.
- TC19 **Environmental Measurements**
Main fields include: analytical measurement of the three main environmental media, air, water, soil, instrumental methods for the measurement of environmental noise and vibration pollution,

development and improvement of analytical methods for measuring environmental pollutants, development of new analytical methods, sensors and instruments for monitoring of air, water and soil quality in residential, industrial, as well as, agricultural areas, remote sensing methods for measuring environmental pollution, evaluation and assessment of environmental data, quality assurance and quality control of environmental measurements.

TC20 **Measurements of Energy and Related Quantities**

Main fields include: Measurement in energy generation, measurement and standards for energy transmission and storage, measurement for energy savings, metering and billing.

TC21 **Mathematical Tools for Measurements**

Bridging the gap between scientists working in the fields of measurement science, metrology, testing, applied mathematics, statistics, databases and IT, allowing better and more efficient tools to be developed for specific purposes;

TC22 **Vibration Measurement**

Measurement in the fields of shock and vibration – measurement of the dynamic quantities of displacement, velocity and acceleration not only if encountered in a periodic form, but also as static or transient measurands (e.g. shock). The motion sensed may be translational as well as rotational (angular vibration).

TC23 **Metrology in Food and Nutrition**

Main fields include: fundamental aspects of food and nutrition measurements, traceability and dissemination, instrumentation and methods in food and nutrition areas, application in many areas including agricultural products, food labeling, food safety, food quality, food processing and packaging, etc.

TC24 **Chemical Measurements**

All fields and areas concerned with analytical measurements, particularly focusing on environment, food and health sectors, thus giving high priority on societal issues.

Further details can be found from IMEKO website at: <https://www.imeko.org>