DR. J. RAMKUMAR
Department of Mechanical Engineering
IIT Kanpur

TYPE OF COURSE : Rerun | Elective | UG | PG

COURSE DURATION : 12 weeks (26 Jul’21 - 15 Oct’21)

EXAM DATE : 24 Oct 2021

PRE-REQUISITES : The student should have completed two semesters of UG Engineering or Science program

INTENDED AUDIENCE : Students of all Engineering and Science disciplines.

INDUSTRIES APPLICABLE TO : HAL, NAL, SAIL, ISRO

COURSE OUTLINE :
Engineering metrology is the use of measurement science in manufacturing. The study of metrology is highly valuable for the students and practitioners, specifically from mechanical and allied engineering stream. For a product to be successful, it needs to be manufactured according to metrological specifications, otherwise heavy costs are incurred to comply with the specifications in the later stage. Also, the role played by measurements in the day today life makes it essential to study metrology. This course is designed to impart the knowledge to develop measurement procedures, conduct metrological experiments, and obtain and interpret the results. A laboratory demonstration are also induced to enhance the learning process. The course would be useful in many areasin the traditional and modern high technology viz. manufacturing, industrial, scientific research, defense, and many others.

ABOUT INSTRUCTOR :
Dr. Janakranjan Ramkumar is currently a Professor of Mechanical Engineering Department, and Design Program, Indian Institute of Technology, Kanpur. He teaches manufacturing science, micro/nano technology, new product development.

COURSE PLAN :

Week 1 : Introduction to Engineering Metrology
Week 2 : Introduction to Engineering Metrology
Week 3 : Statistics in Metrology
Week 4 : Linear Measurements
Week 5 : Angular and rotation measurements
Week 6 : Comparators
Week 7 : Optical measurements, and temperature measurements
Week 8 : Screw threads metrology, and gears metrology
Week 9 : Transducers
Week 10: Flow and Pressure measurements, and strain measurements
Week 11: Surface finish metrology, and mechatronics
Week 12: Nano-metrology, and Quality control