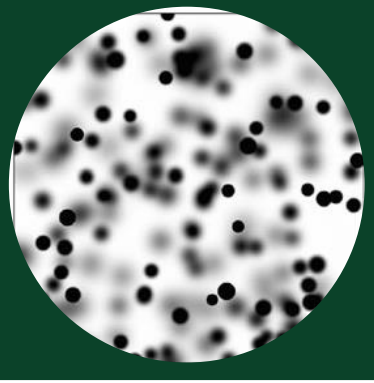
Short Term Course on

Measurement Techniques for Drops and Sprays



Course Co-ordinator:

Prof. Saptarshi Basu,
Department of Mechanical Engineering,IISc.

Course Content:

Optical Fundamentals, Image Processing and Neural Networks, Measurement of Wetting Phenomena, Shadowgraphy and Schlieren, Particle Image Velocity and Particle Tracking Velocimetry, Particle Imaging, Principles of Interferometry and Light Scattering, Phase Doppler Techniques, Spectroscopic Techniques: Laser Induced Fluorescence and TDLAS, Lab Demonstrations (Attached brochure contain detail course content).

Who Can Apply

Bachelor's degree in STEM fields

Registration link:

https://iisc.online/shortterm/home.html

Course Fee per participant:

Students Rs 4500 + 18% GST
Faculty Rs 5500 + 18% GST
Industry Rs 7500 + 18% GST
On-line(without labs) Rs 2500 + 18% GST

Schedule:

November 10-12, 2025
Faculty Hall
Indian Institute of Science
Bengaluru, India

To apply scan here

Mode: Hybrid(Online/Offline)

More Detalis : https://cce.iisc.ac.in/self-support-courses/

Contact us
Centre for Continuing Education
Indian Institute of Science
Bengaluru 560 012, INDIA.
Phone: 91+ 080 2293 2055/2491/2247

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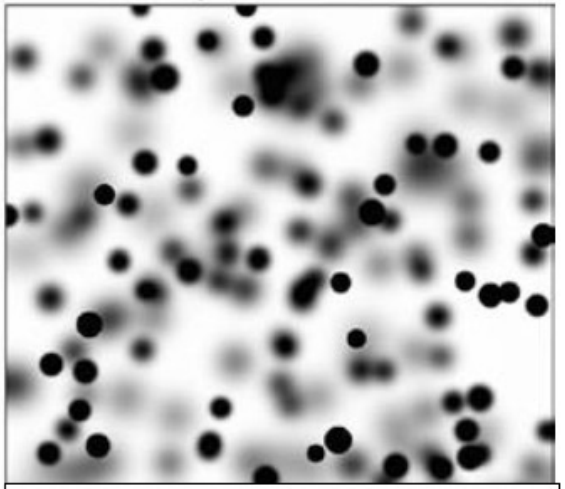

Courtesy of Rixin Xu, Univ. of Shanghai for Science and Technology

Offered by the Mechanical (ME) and Aerospace (AE) Engineering Departments, IISc

With support from the SERB-VAJRA Faculty Scheme

Workshop Chairs: Prof. Basu and Prof. Tropea

Program – Day1

1. **Optical Fundamentals** (Basu)
   Cameras, lenses, aberrations, diffraction limit, illumination, resolution, filters, point spread function, FFT, etc. [1 hr]

2. **Image Processing and Neural Networks** (Das)
   Background removal, normalisation, contouring, thresholding, NN, CNN [1.5 hrs]

3. **Measurement of Wetting Phenomena** (Tropea)
   Contact angles; contact line movement, confocal microscopy, TIRF, Astigmatism PIV, Chromatic confocal sensors [1.5 hrs]

Lunch

Laboratory Demonstrations

Program – Day 2 (Aero)

4. **Shadowgraphy and Schlieren** (Venkatakrishnan)
   Optical configurations, focussing Schlieren, Background orientated Schlieren, Image processing [1 hr]

5. **Particle Image Velocimetry/ Particle Tracking Velocimetry I+II** (Venkatakrishnan)
   Principles, seeding, optical configurations, Stereo PIV, Micro-PIV, Scheimpflug, Image processing, Shake-the-box [2 hr]

6. **Particle Imaging** (Tropea/Rao)
   image processing, sizing, depth from defocus, number conc., non-spherical particles, [1.5 hrs]

Lunch

Laboratory Demonstrations

Schedule: *Lectures are held from 9h to 13h, each 45 min. with 15 min. questions and discussions followed by a 20 min. break. Laboratory demonstrations will be conducted in groups from 14h to 16h, rotating among 3 stations.*
Participants will receive all lecture slides electronically prior to the course, which include information for prior or subsequent reading.

Program – Day3

7. **Principles of Interferometry and Light Scattering** (Tropea) 1.5 hr
   Polarisation, coherence, principles of interferometry, Lorenz-Mie Theory, Geometric optics

8. **Phase Doppler Techniques** (Tropea) 1 hr
   Principles, optical configurations, signal processing, data processing, IPI/ILIDS

9. **Spectroscopic Techniques: Laser Induced Fluorescence and TDLAS** (Basu) 1.5 hrs
   Principles, temperature measurement, species concentration, multiphase flow

Lunch

Laboratory Demonstrations

Laboratories

Lab 1: Shadowgraphy/Schlieren
Dept. of Aerospace Engineering

Lab 1: Image Processing
Dept. of Mechanical Engineering

Lab 2: Particle Imaging/PIV
Dept. of Mechanical Engineering

Lab 3: Phase Doppler
Dept. of Mechanical Engineering **Registration**
Participation will be limited to 80 in-person registrations, available at

Click here

Email: fluidmechanics.me@iisc.ac.in
Fees (including lunches and breaks)

Students	4500 INR
Faculty	5500 INR
Industry	7500 INR
On-line (without labs)	2500 INR

+18% GST

Lecturers

Prof. Saptarshi Basu
IISc Mechanical Engineering

Prof. Debashish Das
IISc Mechanical Engineering

Saini Jatin Rao
IISc Mechanical Engineering

Prof. Cameron Tropea
TU Darmstadt, Germany, Mechanical Engineering (retired)

Dr. Lakshmi Venkatakrishnan
NAL, Bangalore

Who should attend? *This course is intended primarily for researchers at the graduate or post-doctoral level, but also for those working in an industrial research environment. After attending the course, the participants should be in a position to select the most appropriate measurement techniques for their application and know where to find the necessary information to proceed with its implementation. Laboratory demonstrations are provided to complement the classroom lectures.*