



Mechanical Engineering
Indian Institute of Science
Bengaluru, 560 012

Indian Institute of Science

E-mail: chair.me@iisc.ac.in
URL: www.mecheng.iisc.ac.in
Telephone: +91 (80) 2293 2332 (office)



ME 207 (AUG) 3:0

Capillarity and Interfacial Phenomena

Instructor(s): Susmita Dash

Course description:

Interfacial tension, Wetting: minimization of free energy, Dynamics of spreading, Wetting on rough surfaces, Capillary rise, Measurement of Interfacial tension, Hydrodynamics of interfaces: lubrication and thin film analysis, Interfacial instabilities, Marangoni flows, Forced wetting, Dewetting phenomena, Electrochemical transport - diffusio-osmotic and electro-osmotic flows.

Prerequisites:

None.

Resources:

1. P de Gennes, F. Brochard-Wyart and D. Quere, "Capillarity and wetting phenomena", Springer, 2004.
2. V P Carey, "Liquid-Vapor Phase-Change Phenomena", Hemisphere Pub. Corp., 1992.
3. L. G. Leal, "Advanced transport phenomena: fluid mechanics and convective transport processes", Cambridge University Press, 2007.
4. J. H. Masliyah and S. Bhattacharjee, "Electrokinetic and colloid transport phenomena", John Wiley & Sons, 2006.

Additional information:

This course is open to doctoral and master's students interested in interfacial phenomena. Undergraduate students with sufficient background can approach the instructor for permission.