

Course Code	Course Name	L-T-P-Credits	Year of Introduction
BT233	Fluid Flow and Particle Technology Laboratory	0-0-3-1	2016
Prerequisite : BT201 Fluid flow and particle technology			
Course Objectives <ul style="list-style-type: none"> To introduce experiments studying in fluid flow and particle technology theory paper. To explicate industrial applicability of various techniques of fluid flow operations in process engineering with significant emphasis on individual hands on experimentation. 			
Syllabus (At least 11 experiments must be done) <ol style="list-style-type: none"> Study of measurement of pressure Study on factors influencing viscosity of process fluids Reynold's Experiment Determination of drag coefficient and verification of Stoke's law. Estimation of pressure drop for flow through packed bed. Determination of venture coefficient/ orifice coefficient. Particle size analysis by Sieve analysis. Sub sieve particle size analysis using Beaker decantation. Sub sieve particle size analysis using Pipette Analysis. Studies on flocculation- Analysis of orthokinetic and perikinetic aggregation. Batch settling test to determine area of a continuous thickener. Use of viscometers for measurement of viscosity of process fluids. Estimation of various parameters for agitation of liquids. Estimation of pressure drop for flow through fluidized bed. Calibration of Rotameter for liquid flows. Determination of velocity profile using Pitot tube. 			
Expected outcome Upon successful completion of this course, the students will be able to <ul style="list-style-type: none"> Study the effect of factors influencing viscosity of process fluids. Determination of drag coefficient and verification of Stoke's law. Analyse particle size by sieving, beaker decantation and pipette analysis. Carry out batch settling test to determine area of a continuous thickener. Estimation of pressure drop for flow through packed bed and fluidized bed. Calibrate rotameter for liquid flows. 			
Reference Books <ol style="list-style-type: none"> McCabe W. L., J. C. Smith and P. Harriott, <i>Unit Operations of Chemical Engineering</i>, 6/e, McGraw Hill, 2000. Martin J. Rhodes, <i>Introduction to Particle Technology</i>, 2/e, John Wiley & Sons, 2008. Coulson J. M and J. F Richardson, <i>Chemical Engineering: Fluid flow, Heat transfer and Mass transfer (Vol - I)</i>, 5/e, Butterworth-Heinemann, 1999. Coulson J. M and J. F Richardson, <i>Chemical Engineering: Particle technology and Separation processes (Vol - II)</i>, 5/e, Butterworth-Heinemann, 1999. Perry R. H. and D.W. Green, Eds., <i>Perry's Chemical Engineer's Handbook</i>, 7/e, McGraw Hill, 1997. 			