

Design of Industrial Plants

Year 2016-17

Teacher M.Campolo

Topics		34	28	12
Day	Topic	Lesson	Exe	Laboratory
Lu 03/10/16	Motivation and objectives: processes, P&I and unit operations. Tanks design: storage, containment, equalization. Tanks dynamics (filling, emptying).	2		1
Ma 04/10/16	Transport of incompressible fluids: continuity and Bernoulli equations, Sizing of Hydraulic lines		2	
Lu 10/10/16	Optimal diameter of pipings. Characteristic curves of pumps and piping systems. Measurements of pump characteristic	2		1
Ma 11/10/16	Sizing of Hydraulic lines (exe)		2	
Lu 17/10/16	Laboratory experience: devices for measurements of pressure drop and flow rate; measurements of pressure drop on hydraulic line. Drag reduction by polymer injection.			3
Ma 18/10/16	Transport of compressible fluids: differential form of Bernoulli equation, conservation of mass; adiabatic efflux from reservoir	2		
Lu 24/10/16	Isothermal/adiabatic flow along pipelines	1	2	
Ma 25/10/16	Transport of compressible fluid (exe)		2	
Lu 31/10/16	III laboratory experience: filling/emptying of gas reservoir, pressure drop in compressible flow			3
Ma 01/11/16	Transport of compressible fluid (exe)		2	
Lu 07/11/16	Particle dynamics: forces acting on particles, stopping distance, terminal velocity	2		1
Ma 08/11/16	Particulate matters: size distribution and other relevant properties	2		
Lu 14/11/16	Particulate dynamics (exe)		3	
Ma 15/11/16	Fluidization and systems for pneumatic transport	2		
Lu 21/11/16	Multiphase flows: flow regimes and pressure drops	2	1	
Ma 22/11/16	V laboratory experience: pressure drop in multiphase flow			2
Lu 28/11/16	Flow through porous media; packing characteristics, Ergun equation for pressure drop	2		1
Ma 29/11/16	Mechanical separation of solids: collection mechanisms, collection efficiency, pressure drop, design criteria		2	
Lu 05/12/16	Mechanical separation systems: settling chambers, Electrostatic precipitators; sizing and costs	2	1	
Ma 06/12/16	Sizing of settling chambers, ESP, cyclonic devices (exe)	1	1	
Lu 12/12/16	Cloth Filters: filtration velocity, pressure drop, costs	2		
Ma 13/12/16	Heat transfer: conduction, convection, radiation. Overall heat transfer coefficient. Tubular heat exchanger (co/counter flow)	2		
Lu 19/12/16	Heat exchanger: dT-lm, sizing of devices	2	1	
Ma 20/12/16	Heat exchanger (exe)		2	
Lu 09/01/17	Mass transfer: Fick law, diffusion to/from droplet/film	2	1	
Ma 10/01/17	Mass transfer coefficient, mass transfer across interfaces (two-film theory)	2		
Lu 16/01/17	Gas cleaning: absorption/desorption	1	2	
Ma 17/01/17	Absorption columns: plate/packing columns	2		
Lu 23/01/17	Fluidodynamic sizing of packing columns (flooding, loading, ...), calculation of column height	1	2	
Ma 24/01/17	Equilibrium stage operations: leaching		2	