

Chemical Plant Design

Year 2013-2014
Teacher M.Campolo

Topics		36	22	8	66
Day	Topic	Lesson	Exe	Laboratory	Teacher
Me	02/10/13	Motivation and objectives: processes, P&I and unit operations. Tanks design: storage, containment, equalization. Tanks dynamics (filling, emptying).	2		Dr. Campolo
Ve	04/10/13	Transport of incompressible fluids: continuity and Bernulli equations, Sizing of Hydraulic lines		2	Dr. Campolo
Lu	07/10/13	Laboratory experience: devices for measurements of pressure drop and flow rate; measurements of pressure drop on hydraulic line		2	Dr. Campolo
Me	09/10/13	Optimal diameter of pipings. Characteristic curves of pumps and piping systems.	2		Dr. Campolo
Ve	11/10/13	Sizing of Hydraulic lines (exe)		2	Dr. Campolo
Lu	13/10/11	Measurements of pump characteristic curve		2	Dr. Campolo
Me	16/10/13	Trasport of compressible fluids: differential form of bernoulli equation, conservation of mass; adiabatic efflux from reservoir	2		Dr. Campolo
Ve	18/10/13	Isothermal/adiabatic flow along pipelines	2		Dr. Campolo
Lu	21/10/13	III laboratory experience: filling/emptying of gas reservoir, pressure drop in compressible flow		2	Dr. Campolo
Me	23/10/13	Transport of compressible fluid (exe)		2	Dr. Campolo
Ve	25/10/13	Transport of compressible fluid (exe)		2	Dr. Campolo
Me	30/10/13	Particle dynamics: forces acting on particles, stopping distance, terminal velocity	2		Dr. Campolo
Ve	01/11/13	Holiday			Dr. Campolo
Me	06/11/13	Particulate matters: size distribution and other relevant properties	2		Dr. Campolo
Ve	08/11/13	Particulate dynamics (exe)		2	Dr. Campolo
Me	13/11/13	Fluidization and systems for pneumatic transport	2		Dr. Campolo
Ve	15/11/13	Multiphase flows: flow regimes and pressure drops	2		Dr. Campolo
Lu	18/11/13	V laboratory experience: pressure drop in multiphase flow		2	Dr. Campolo
Me	20/11/13	Flow through porous media; packing characteristics, Ergun equation for pressure drop	2		Dr. Campolo
Ve	22/11/13	Mechanical separation of solids: collection mechanisms, collection efficiency, pressure drop, design criteria		2	Dr. Campolo
Me	27/11/13	Mechanical separation systems: settling chambers, Electrostatic precipitators; sizing and costs	2		Dr. Campolo
Ve	29/11/13	Sizing of settling chambers, ESP, cyclonic devices (exe)		2	Dr. Campolo
Me	04/12/13	Cloth Filters: filtration velocity, pressure drop, costs	2		Dr. Campolo
Ve	06/12/13	Heat transfer: conduction, convection, radiation. Overall heat transfer coefficient. Tubular heat exchanger (co/counter flow)	2		Dr. Campolo
Me	11/12/13	Heat exchanger: dT-lm, sizing of devices	2		Dr. Campolo
Ve	13/12/13	Heat exchanger (exe)		2	Dr. Campolo
Me	18/12/13	Mass transfer: Fick law, diffusion to/from droplet/film	2		Dr. Campolo
Ve	20/12/13	Mass transfer coefficient, mass transfer across interfaces (two-film theory)	2		Dr. Campolo
Me	08/01/14	Gas cleaning: absorption/desorption		2	Dr. Campolo
Ve	10/01/14	Absorption columns: plate/packing columns	2		Dr. Campolo
Me	15/01/14	Fluidodynamic sizing of packing columns (flooding, loading, ...), calculation of column height		2	Dr. Campolo
Ve	17/01/14	Sizing of packing columns (exe)		2	Dr. Campolo
Me	22/01/14	Equilibrium stage operations: leaching	2		Dr. Campolo
Ve	24/01/14	Plate columns design	2		Dr. Campolo
Me	29/01/14	exercises		2	Dr. Campolo