

## Design of Industrial Plants

Year 2017-18

Teacher M.Campolo

Topics		36	12	12	60
Day	Topic	Lesson	Exe	Id.Integrativ	Teacher
Gio 05/10/17	Motivation and objectives: processes, P&I and unit operations. Tanks design: storage, containment, equalization. Tanks dynamics (filling, emptying).	2			Dr. Campolo
Ven 06/10/17	Transport of incompressible fluids: continuity and Bernoulli equations, Sizing of Hydraulic lines	2			Dr. Campolo
Gio 12/10/17	Optimal diameter of pipings. Sizing of Hydraulic lines (exe)		2		Dr. Campolo
Ven 13/10/17	Trasport of compressible fluids: differential form of bernoulli equation, conservation of mass; adiabatic efflux from reservoir	2			Dr. Campolo
<b>Mer 18/10/2017</b> <b>(Modulo 13, h 10.30-11.30)</b>	Laboratory experience: devices for measurements of pressure drop and flow rate; measurements of pressure drop on hydraulic line. Pump characteristic curve			2	Dr. Campolo
Gio 19/10/17	Isothermal/adiabatic flow along pipelines	2			Dr. Campolo
Ven 20/10/17	Transport of compressible fluid (exe)		2		Dr. Campolo
<b>Mer 25/10/2017</b> <b>(Modulo 13, h 10.30-11.30)</b>	Laboratory experience: filling/emptying of gas reservoir, pressure drop in compressible flow			2	Dr. Campolo
Gio 26/10/17	Particle dynamics: forces acting on particles, stopping distance, terminal velocity	2			Dr. Campolo
Ven 27/10/17	Particulate matters: size distribution and other relevant properties	2			Dr. Campolo
Gio 02/11/17	Particulate dynamics (exe)		2		Dr. Campolo
Ven 03/11/17	Fluidization and systems for pneumatic transport	2			Dr. Campolo
<b>Mer 08/11/17</b>	Transport of compressible fluid/Fluidization systems (exe)			2	
Gio 09/11/17	Multiphase flows: flow regimes and pressure drops	2			Dr. Campolo
Ven 10/11/17	Flow through porous media; packing characteristics, Ergun equation for pressure drop	2			Dr. Campolo
<b>Mer 15/11/2017</b> <b>(Modulo 13, h 10.30-11.30)</b>	Laboratory experience: pressure drop in multiphase flow			2	Dr. Campolo
Gio 16/11/17	Mechanical separation of solids: collection mechanisms, collection efficiency, pressure drop, design criteria	2			Dr. Campolo
Ven 17/11/17	Mechanical separation systems: settling chambers, Electrostatic precipitators; sizing and costs		2		Dr. Campolo
Gio 23/11/17	Sizing of settling chambers, ESP, cyclonic devices (exe)	2			Dr. Campolo
Ven 24/11/17	Cloth Filters: filtration velocity, pressure drop, costs	1	1		Dr. Campolo
Gio 30/11/17	Heat transfer: conduction, convection, radiation. Overall heat transfer coefficient. Tubular heat exchanger (co/counter flow)	2			Dr. Campolo
Ven 01/12/17	Heat exchanger: dT-lm, sizing of devices	2			Dr. Campolo
<b>Mer 06/12/17</b>	Heat exchanger (exe)			2	
Gio 07/12/17	Mass transfer: Fick law, diffusion to/from droplet/film	2			Dr. Campolo
Gio 14/12/17	Mass transfer coefficient, mass transfer across interfaces (two-film theory)	2			Dr. Campolo
Ven 15/12/17	Gas cleaning: absorption/desorption	2			Dr. Campolo
Gio 21/12/17	Absorption columns: plate/packing columns		2		Dr. Campolo
<b>Ven 22/12/17</b>	Esercizi assorbimento			2	
Gio 11/01/18	Fluidodynamic sizing of packing columns (flooding, loading, ...), calculation of column height	2			Dr. Campolo
Ven 12/01/18	Equilibrium stage operations: leaching	1	1		Dr. Campolo