UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Processi Chimici e Tecnologie

2122-1-F5401Q069

Learning area

Learning objectives

Provide advanced tools for understanding the technologies and plant choices used in the chemical industry, sizing and evaluating the solutions identified from an energy and environmental impact point of view. Propose a path, through the subjects dealt with, which shows the interdisciplinarity of the choices that graduates in Chemical Sciences and Technologies must face every day in the exercise of their duties.
Further consolidate the relationship between universities and industry, structurally complementary for intellectual and industrial development.

Contents

Energy and chemical industry

Production of building blocks from renewable sources

Reactoristics

Advanced matter transport phenomena

Detailed program

- Evolution of the energy aspect in the chemical industry; trends in green chemistry, decarbonisation, energy efficiency, CO2 capture and greenhouse gases.

- Chemical technologies: absorption and stripping, reactor engineering (piston and mixing reactors, isothermal and non-isothermal), catalysis, hydrolysis (membranes). Contextualization in corporate areas of concepts such as sustainability, LCA and other benchmarks (CDP, carbon footprint);

- energy production and advanced fuels

- chemical processes starting from renewable raw materials

- biocompatible polymers and monomer production from renewable sources

Prerequisites

Fundamentals of thermodynamics of chemical equilibria, transport phenomena, organic and inorganic chemistry, catalysis and chemical kinetics.

Teaching methods

Theoretical lectures with explanations on the blackboard and use of slides, in-depth studies with complementary notions during the exercises activities

Assessment methods

Written and oral exam.

The short written test (max 20 ') serves as admission for the next oral exam.

Required skills: ability to re-elaborate the concepts acquired in the classroom in the field of problem solving; resolution of short quali-quantitative questions in the industrial field. Clear presentation of the concepts learned during the course.

Textbooks and Reading Materials

Jacobs A. Moulijn,Michiel Makkee,Annelies Van Diepen

Chemical Process Technology

Ed Wiley

Carlo Giavarini

Guida allo studio dei processi di raffinazione e petrolchimica

Ed Efesto

Forni Rossetti

fenomeni di trasporto

Ed Cortina Milano

Gian Berto Guarise

Lezioni di impianti chimici

Ed Cleup

Natoli Calatozzolo

Tecnologie chimiche industriali

Ed Edisco

F.Di Benedetto

Oil and Bio trading

Ed FrancoAngeli