

Course Syllabi

1. INGE-00031 UNITAR OPERATIONS II EXTRACTION AND ABSORTION

2. Instructor:

- Maria Eulalia Peñafiel Tenorio

3. Bibliography

- Ingeniería de Procesos de Separación., Phillip C. Wankat, 2008
- Problemas de Ingeniería Química: Operaciones básicas, Ocon García, Joaquín. and Tojo Barreiro, Gabriel, 1978
- Operaciones unitarias en ingeniería química, Problemas de Ingeniería Química: Operaciones básicas, 2007

4. Specific Course Information

- a. The subject studies in the basic operations of separation of components: Extraction and Absorption, depending on the type of mixtures that you want to separate: liquid mixtures, solids or gaseous mixtures. Extraction is an operation of separation of a substance that can be dissolved in two phases not miscible to each other, with different degree of solubility and that are in contact through an interface. While the Absorption can be defined as a unitary operation consisting of the separation of a or more components of a gaseous mixture with the help of a liquid solvent with which it forms a solution. The subject of Extraction and Absorption contributes to the following Accomplishments of Learning Profile of the Chemical Engineer: 1. Control experiments and processes in the field of Chemical Engineering, considering transport phenomena, unitary operations, chemical processes, and operational research, in order to obtain relevant information and meet previously defined objectives. 2. Apply the basic foundations of training research, at the exploratory and diagnostic levels, in an appropriate way, for the development of experiments, for the search, selection and evaluation of information, for the preparation of bibliographical essays and academic articles and for the communication of findings. 3. Implement technologies related to the physical and chemical transformation of materials, effectively, incorporating improvements or innovations.

b. Prerequisites:

- INGE-00028 Op I filtration-fluidisation
- INGE-00029 Op I solid handling

5. Learning Objectives of the Course

- a. Identify and apply liquid extraction - liquid, solid-liquid and gas absorption operations in the processes of separation of liquid, solid and gaseous mixtures applied at the industrial level, as well as the assessment and control of such processes - Interpret the processes of liquid extraction - liquid, solid - liquid and gas absorption and identify them clearly. - Apply different ways to perform the processes of liquid extraction - liquid, solid - liquid and gas absorption is - Design a process of extraction or absorption of gases as the case may be in a given process, considering economic balances

b. Learning Outcomes

1. Design a gas extraction or absorption process as the case may be in a given process, taking into account economic balances
2. Identify the processes of liquid extraction – liquid, solid – liquid and degas absorption.
3. Identify equipment used in different extraction and absorption processes.
4. Apply the equations and balances too much to perform the processes of liquid extraction – liquid,

solid – liquid and degas absorption.

6. Course Topics

1. Introduction
2. Ternary diagrams for liquid extraction - liquid
3. Liquid extraction - liquid sentile contact
4. Liquid extraction - multipack liquid in current direct and countercurrent
5. Solid extraction - liquid
6. Absorption of gas