

CHE 205 MASS AND ENERGY BALANCES

Instructors: Assoc. Prof. Ayşe Karakeçili

Assist. Prof. Berna Topuz

References:

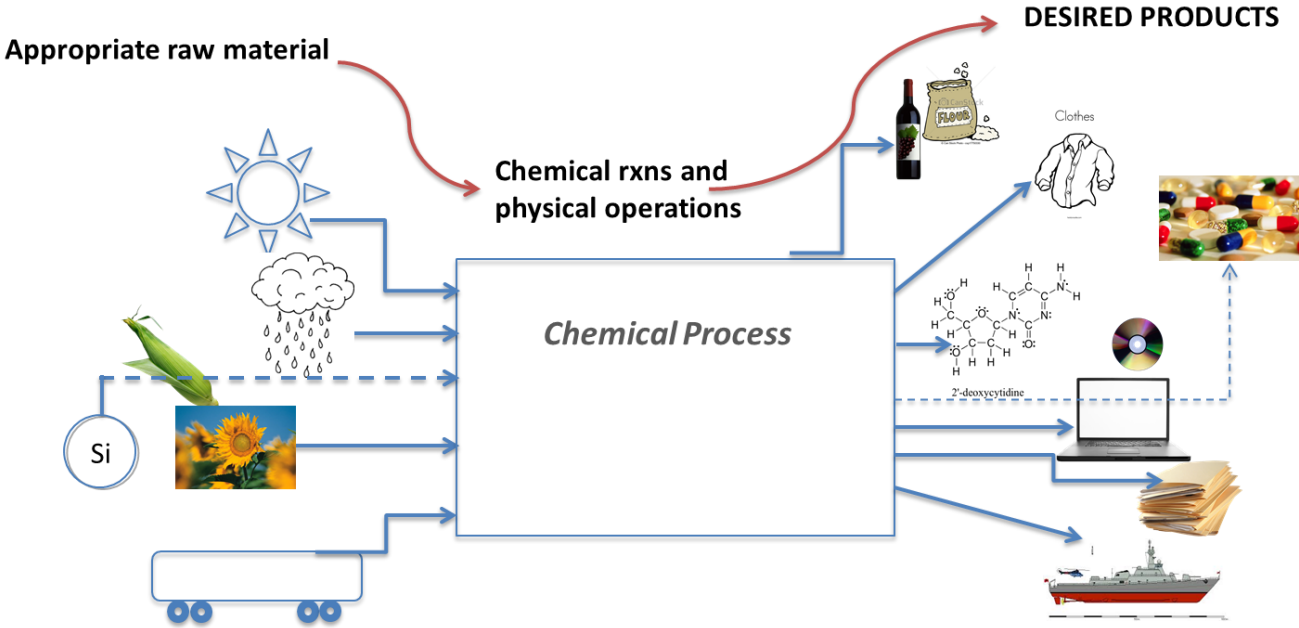
1. Elementary Principles of Chemical Processes, Felder, R., Rousseau, R., John Wiley and Sons, 3rd edition, 2005.
 2. Introduction to Chemical Processes, Murphy, R., McGraw Hill, International edition, 2007.
 3. Basic Principles and Calculations in Chemical Engineering, Himmelblau, D., Riggs, J., Prentice Hall, 8th edition, 2012.
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INTRODUCTION

Objectives of the course: Synthesis of chemical processes, Balancing chemical reaction equations, Analysis for generation and consumption, Choosing a basis, Chemical reaction stoichiometry, Energy calculations in chemical processes.

Chemical processes are used to convert raw materials into useful products (Figure 1). In such processes chemical and physical properties of materials are changed. All industrial products -paper, plastics, fuels, glass-depend on chemical processes. It is important to choose appropriate raw materials and chemical reaction pathways for designing and developing efficient, safe and economical chemical processes.

As a chemical engineer, we need to design and operate a process, individual process units and associated operating variables. It is important to define and illustrate measurement techniques and methods of calculating variables to characterize the operation of processes.



- To make a product that has a specific desired function
- To convert waste material into useful products
- To improve the performance of a natural material
- To convert material into energy

Figure 1. Chemical processes.