University of Baghdad

College of Engineering

Chemical Engineering Department

Chemical Engineering principles

First Year
Dr. Ahmed Faiq Al-Alawy

Part 1
INTRODUCTION

Chapter

1 Dimensions, Units, and Their Conversion.
2 Moles, Density, and Concentration.
3 Choosing a Basis.
4 Temperature.
5 Pressure.

Part 2
MATERIAL BALANCES

Chapter

6 Introduction to Material Balance.
7 General Strategy for Solving Material Balance Problems.
8 Solving Material Balance Problems for Single Units without Reaction.
9 The Chemical Equation and Stoichiometry.
10 Material Balances for Processes Involving Reaction.
11 Material Balance Problems Involving Multiple Units.
12 Recycle, Bypass, and Purge and the Industrial Application of Material Balances.

Part 3
GASES, VAPORS, LIQUIDS AND SOLIDS

Chapter

13 Ideal Gases
The Ideal Gas Law
Ideal Gas Mixtures and Partial Pressure
Material Balances Involving Ideal Gases

References

1. David M. Himmelblau and James B. Riggs, "**Basic Principles and Calculations in Chemical Engineering",** Seventh Edition, (2004).
2. Richard M. Felder and Ronald W. Rousseau, "**Elementary Principles of Chemical Processes",** Third Edition, (1999).
3. David M. Himmelblau, "**Basic Principles and Calculations in Chemical Engineering",** Sixth Edition, (1996).
4. David M. Himmelblau, "**Basic Principles and Calculations in Chemical Engineering",** Fifth Edition, (1989).