Chemical Engineering for Non-Engineers

5 – Day Training Program

INTRODUCTION

Chemical Engineering is a branch of Engineering which is concerned with the design, construction, and management of factories in which the essential processes consist of chemical reactions, petrochemicals processes, food & drink industry, Pharmaceutical factories, and oil & Gas. Due to the diversity of the materials dealt with, the practice, for more than 50 years, has been to analyze chemical engineering problems in terms of fundamental unit operations or unit processes such as the grinding or pulverizing of solids for example. It is the task of the chemical engineer to select and specify the design that will best meet the particular requirements of production and the most appropriate equipment for the new applications.

This short training course will enable the participants to have a better understanding of the processes and operations treated by chemical
Engineering, the trainees will be gain awareness with regard to the variables of operations and how to control them. There will be many case studies to learn from and to share the experience of qualified chemical engineers.

WORKSHOP OBJECTIVES

Upon completion of this short course, the participants will learn and understand all terms, treatment operations and processes covered by chemical engineering. They will be able to assess and define the operating variables, they will have a better understanding of how to apply chemical engineering terms, and differentiate between chemical processes and operations. They will also gain knowledge on problem solving and be aware of health and safety issues related to the job of chemical engineers.

WHO SHOULD ATTEND

- Those involved in or carrying out chemical processes
- Those who have hands on experience on related equipment.
- Also, those who want to learn the terms and variables used in a chemical process and have worked in the chemical or petrochemical industry.
- New non –Chemical Engineering graduates and other Scientists.

Learning Outcomes

After studying this course, attendees should be able to:

- Understand the terms and processes used in chemical engineering
- Be able to identify operation variables to be controlled in chemical process
- Be able to do identify safety issues in the chemical industry
- Be able to understand the operation and construction of chemical engineering equipment
- Understand the importance of problem solving related to chemical engineering
- Be aware about environmental impact and health & safety issues.

PROGRAM

DAY ONE

Introduction

- Principles of chemical engineering
- Definitions for Terminology used
- Examples for Industries covered

Four fundamentals in chemical engineering:

- The conservation of matter;
- The conservation of energy;
- The principles of chemical equilibrium;
- The principles of chemical reactivity.

DAY TWO

Separation Processes-1 in chemical engineering

- Distillation
- Gas absorption & treatment
- Extraction

Construction and operation of processes equipment

- Variables to be considered
- Health and Safety Issues

DAY THREE

Separation Processes-2 in Chemical Engineering

- Evaporation
- Crystallisation

Filtration

- Construction and operation of processes
- Variables to be considered & their Control
- Health and Safety related Issues

DAY FOUR

Separation Processes-3 in chemical engineering

- Centrifugation
- Drying & calcining
- Sedimentation & Gas cleaning

Construction and operation of processes equipment

- Variables to be considered & their Control
- Health and Safety related Issues

DAY FIVE

Principle of Chemical Process control

- Variables, Faults, symptoms, and fault diagnoses, Tolerance, errors, accuracy.
- Charts reading, data handling, manual and automatic operations

Case studies

- There will be several actual case studies to share the experience from others & Brainstorming session with workshop activities
- Methods of storage of chemicals (raw materials and final products)
- Selection Criteria for equipment in chemical engineering
- Health, Safety and Environmental Issues in chemical engineering