BCH

COMPUTER AIDED DRAWING

CH151

Year : I
Part : II

Lecture : 1
Tutorial : 0
Practical : 3

Course Objectives:
This course focuses on utilizing Computer Aided Drawing software for creating detailed 2D and 3D drawings and models relevant to chemical engineering. Students will learn to apply CAD tools to represent chemical process equipment, design process flows, and generate engineering drawings

1 Introduction to CAD for Chemical Engineering (3 hours)

1.1 Overview of CAD and its applications in chemical engineering
1.2 Basic concepts, Navigating the CAD
1.3 Basic commands and modifications

2 2D Drawing Fundamentals (3 hours)

2.1 Drawing and editing tools in 2D
2.2 Layers, line types, and object properties
2.3 Isometric and Orthographic drawings
2.4 Creating 2D diagrams for chemical processes equipment.

3 PFD and P&ID (3 hours)

3.1 Creating PFD (Process Flow Diagrams) and schematics for chemical processes
3.2 P&ID (Piping and Instrumentation Diagram) basics
3.2.1 Introduction to P&ID symbols and conventions
3.2.2 Creating P&ID drawings
3.3 Symbol libraries and blocks

4 3D Modeling (3 hours)

4.1 Introduction to 3D modeling concepts
4.2 Creating 3D models of chemical equipment and components
4.3 Using 3D solids and surfaces

5 Advanced 3D Modeling (1.5 hours)

5.1 Assembly modeling and parametric design
5.2 Rendering and visualization of 3D models
5.3 Importing and exporting 3D data

6 Chemical Equipment Design (1.5 hours)

6.1 Modeling and design of chemical equipment
6.2 Integration with process simulation software
6.3 Equipment layout and design

Practical

1. Introduction, Navigation and Basic Commands (6 period)
2. 2D Drawing Basics ; Line, Circle, Ellipse, Polygon (6 period)
3. 2D Drawing Mastery: Creating Chemical Process/Equipment Diagrams (6 period)
4. PFD Proficiency: Designing Chemical Processes (6 period)
5. P&ID Proficiency: Designing Chemical Processes (6 period)
6. Introduction to Graphical Symbols for Chemical Engineering Applications. (3 period)
7. Developing Assembly Drawings for Chemical Engineering Equipment (3 period)
8. Plant Layout Drawing (9 period)

Final Exam

References

1. Bharath, A. (2014). Introduction to AutoCAD Plant 3D 2015. Createspace Independent Publishing Platform.
2. Sinnott, R. (2005). Chemical Engineering Design. Elsevier.
3. French, T. E., Vierck, C. J., & Foster, R. J. (2010). Engineering Drawing and Graphic Technology. McGraw Hill Publishing Co.

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