

# TEACHING AND LEARNING SYSTEMS FOR PROCESS ENGINEERING

From the abstract molecular world to the process engineering system: **We accompany you**

*Systematic training is essential in order to understand the complex technological relationships. This is the reason why the adjacent learning structure for process engineering (technology) has developed and established itself over time. This catalogue is based on this structure.*

## THE THEORETICAL FUNDAMENTALS

Without knowledge of the basic laws of phase transformation or molecular heat and mass transport, it is not possible to understand the basic processes of process engineering. Process engineering is an interdisciplinary science and partially uses the knowledge of other

engineering disciplines such as, e.g. thermodynamics and fluid mechanics. In addition, basic knowledge of measuring methods and control engineering is essential for the safe and efficient execution of the complex processes.

## THE PRACTICAL FUNDAMENTALS

The implementation of the theoretically calculated processes takes place in real systems comprising components such as pipelines, tanks and pumps. The characteristics of pumps, the properties of connecting elements and the adjustment characteristic of control valves are just a few of the important basics

for developing, designing and operating process engineering systems. The operating mode of the individual components is of particular importance to mechanics and skilled workers who maintain and service process engineering systems.

## PROCESS CONTROL ENGINEERING

The automated operation and monitoring of process engineering systems require extensive knowledge of process control engineering, which can only be imparted to a limited extent in the scope of a process engineering training course. For training specialists in this area, GUNT has compiled a separate range of devices.



## THE UNIT OPERATIONS

The unit operations of process engineering are divided into four different core areas according to the treatment method. A basic process is the smallest theoretically defined unit of an overall process. The restriction to these small units makes sense from a research

perspective and also a didactic perspective as complex, multiple problems already have to be solved at the unit operations level due to the several phases (solid, liquid, gaseous) and substances involved.

## THE APPLICATION AREAS

The application areas of process engineering are manifold. The basic processes are modified and combined depending on the objective. Due to the relevance to society as a whole, the energy and environmental engineering sectors have come about in the recent

past. From the environmental engineering sector, you will find the complete water treatment product range in the last chapter of this catalogue. You will also find many other application areas of process engineering in our Energy & Environment product sector.

## FUNDAMENTALS OF PROCESS ENGINEERING

Chapter 1   THEORY	Chapter 2   PRACTISE
<ul style="list-style-type: none"> <li>■ Thermodynamics</li> <li>■ Heat and Mass Transfer</li> <li>■ Fluid Mechanics</li> <li>■ Fundamentals of Control Engineering</li> <li>■ Measuring Methods</li> </ul>	<ul style="list-style-type: none"> <li>■ Tanks and Materials</li> <li>■ Pumps and Compressors</li> <li>■ Piping Elements and Fittings</li> <li>■ Heat Exchangers and Steam Generators</li> <li>■ Applications of Control Engineering</li> </ul>

## UNIT OPERATIONS OF PROCESS ENGINEERING

Chapter 3	Chapter 4	Chapter 5	Chapter 6
Mechanical Process Engineering	Thermal Process Engineering	Chemical Process Engineering	Biological Process Engineering

## APPLICATIONS FROM ENERGY AND ENVIRONMENTAL ENGINEERING

### Chapter 7 | WATER TREATMENT



- Biomass
- Water
- Air
- Soil
- Waste

