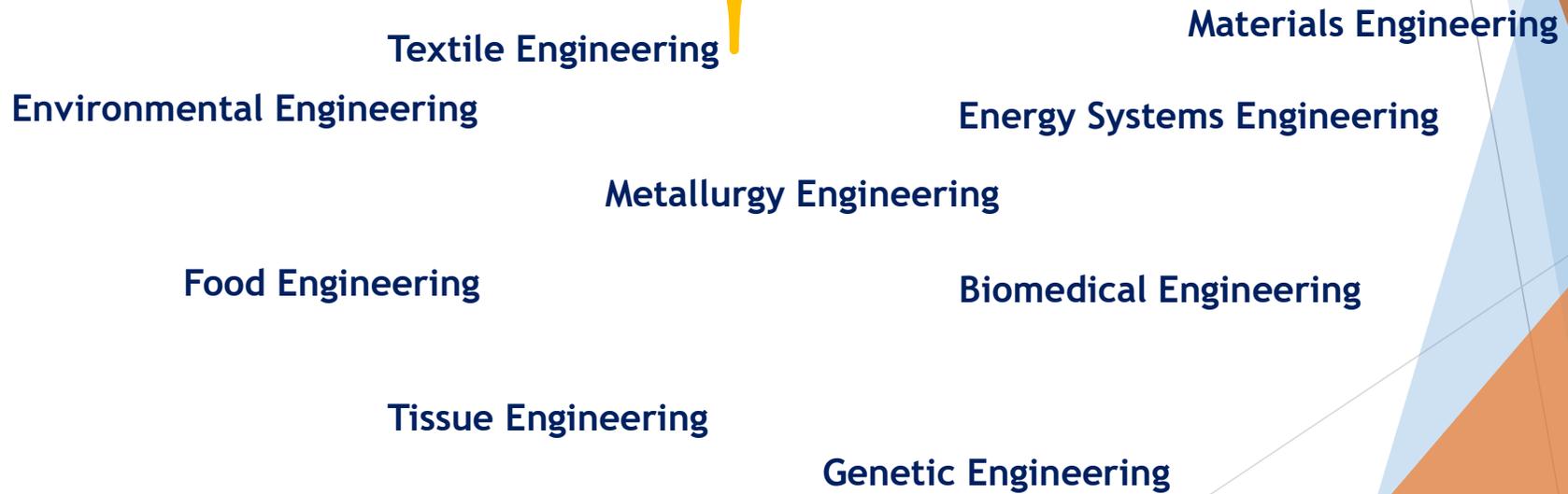
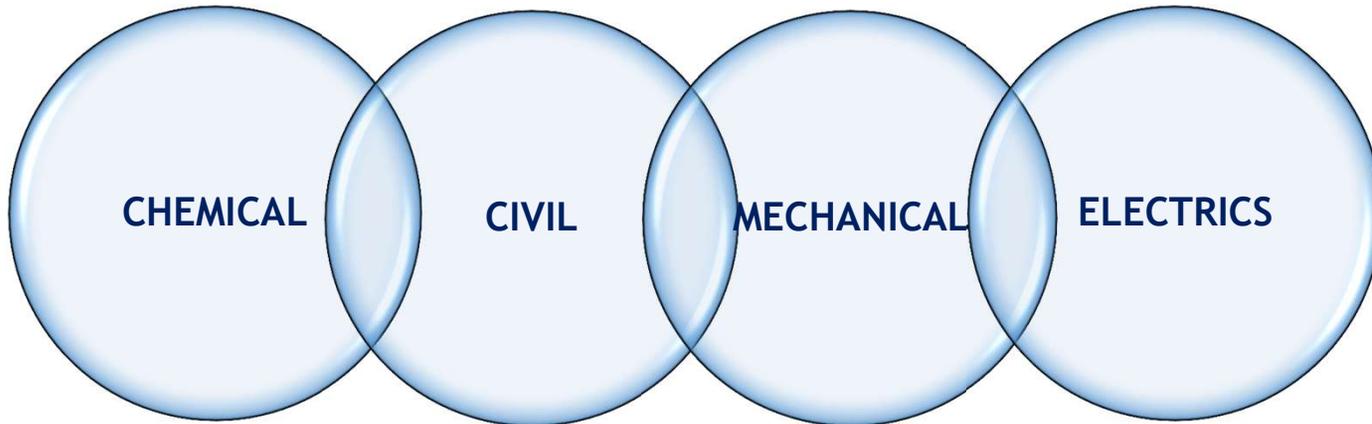


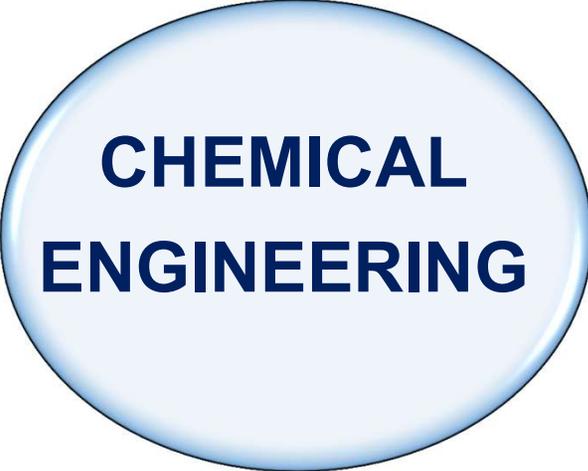


FACULTY OF ENGINEERING  
DEPARTMENT OF CHEMICAL ENGINEERING

# ***INTRODUCTION TO CHEMICAL ENGINEERING CEN 101***

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# CHEMICAL ENGINEERING

**Chemical engineering** is a **branch** of engineering that uses principles of chemistry, physics, biology mathematics, and economics

**to efficiently use, produce, transform, and transport chemicals, materials, and energy,**

**to adress World's needs by creating new technology, and**

**to solve industrial, technological and environmental problems.**



**CHEMICAL ENGINEERING** deals with chemical processes where raw materials are converted to valuable products through chemical reactions and physical changes.

**CHEMICAL ENGINEER** should design and develop a chemical process with its all components, select suitable raw materials and operate the plant efficiently, safely and economically and environmental friendly.

## **CHEMICAL ENGINEER;**

- **Uses the science and creativity together to solve the problem**
- **Should always try and query.**
- **Professional success depends on his/her ability to combine all information to solve problems and to reach practical solutions.**



**Chemist:**  
Basic Science  
Laboratory Scale

Interests in behavior of components (e.g., of a rxn) and works with small amounts of substances in the laboratory.

**Chemical Engineer:**  
Applied Science  
Industrial Scale

Designs the processes and plants to convert laboratory work into useful, economical products by using chemistry knowledge.

# HISTORY OF CHEMICAL ENGINEERING

## Origin

The Industrial Revolution (1760-1840) led to an unprecedented escalation in demand, both with regard to quantity and quality for many bulk chemicals such as water softener soda ash (sodium carbonate,  $\text{Na}_2\text{CO}_3$ ), etc.

This meant two things:

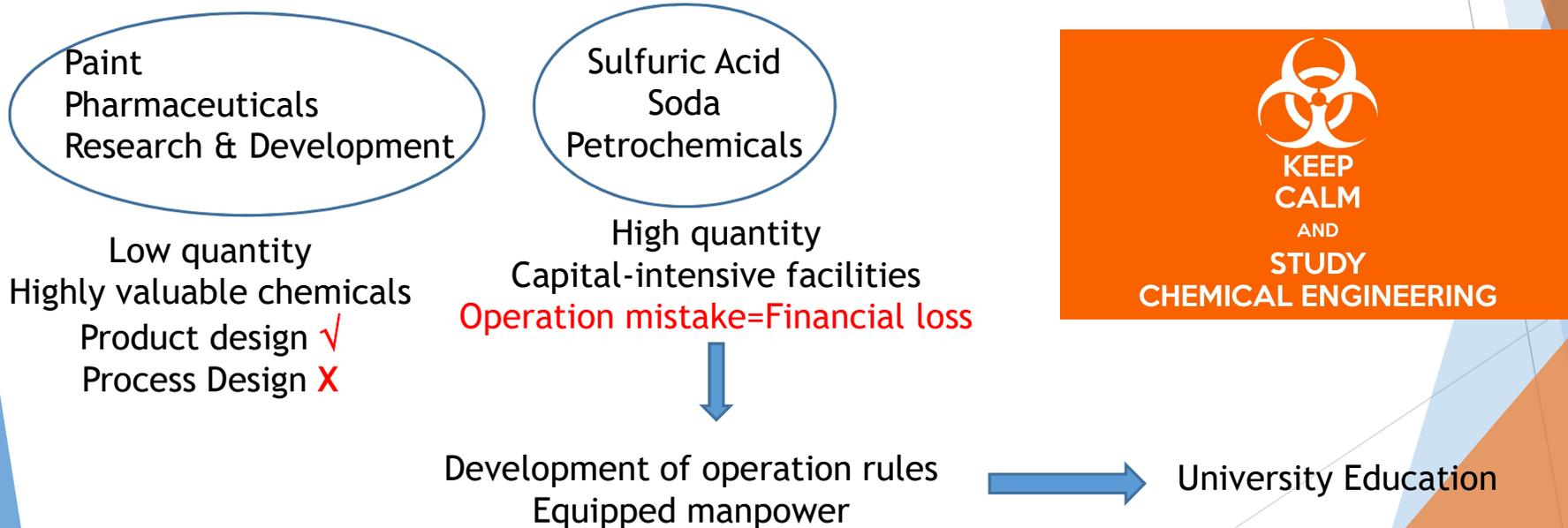
- 1) The size of the activity and the efficiency of operation had to be enlarged,
- 2) Serious alternatives to batch processing, such as continuous operation, had to be examined.

**Chemical engineering** as a discipline that was developed out of those practising "industrial chemistry" in the late 19th century.

# HISTORY OF CHEMICAL ENGINEERING

## FIRST CHEMICAL ENGINEERING EDUCATION AND DEPARTMENTS

Industrial chemical production was first performed by the joint studies of Mechanical and Chemical Engineers in England and Germany.



## FIRST CHEMICAL ENGINEERING EDUCATION AND DEPARTMENTS

- In **1887**, the first chemical engineering course was given at the University of Manchester by George E. Davis in the form of twelve lectures covering various aspects of industrial chemical practice. As a consequence **George E. Davis** is regarded as **the world's first chemical engineer**.
- In **1888**, **Lewis Norton** initiated the **first four-year chemical engineering education** in the Chemistry Department of the Massachusetts Institute of Technology under the name of **COURSE X**.
- In **1893**, Edgar Smith established the first independent chemical engineering department at the **University of Pennsylvania**.
- At the beginning of the 20th century, William Walker from MIT organized Course X to distinguish chemical engineering as an occupation and developed the concept of **Unit Operations** together with Arthur Little.
- In the following years, chemical engineering departments were established at Columbia University, Michigan State and Wisconsin University.
- The first program in England was established in 1923 at the University of London.

# FIRST CHEMICAL ENGINEERING EDUCATION AND DEPARTMENTS IN TURKEY

Lack of education  
Lack of qualified labor force  
Lack of scientific infrastructure  
No industrial revolution  
Lack of understanding of university

- 1958 Middle East Technical University  
First modern Chemical Eng. education  
**Prof. Dr. Tarık SOMER**

- 1918 Darülfünun Chemistry Institute  
1918-1933 171 Chemist graduated

- 1933 University Reform  
Establishment of Istanbul University  
General Chemistry, Physical Chemistry, Industrial Chemistry  
Migration of scientists from Germany to Turkey

- 1943 Ankara University, Faculty of Science