



ORIENTATION TO PRE-ENGINEERING STUDENTS JANUARY 2025

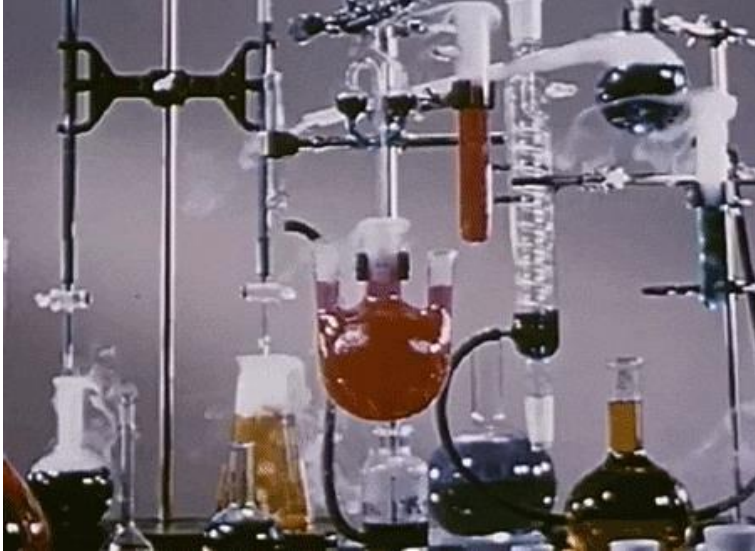
What consider for program selection

- ❖ Country situation (what is the gov. plan)
- ❖ Future opportunity
- ❖ Your interest
- ❖ Practical knowledge
- ❖ Self employee and entrepreneur

❖ Information (senior student, instructors, ...)(avoid biased information)

What is Chemical Engineering?

❑ Chemical engineering is an engineering field which deals with the **study of operation** and **design of chemical plants** as well as methods of improving production.



What is Chemical Engineering?



Using principles of **chemistry**, **physics**, **biology**, **mathematics** and **economics**, chemical engineers **design equipment**, **processes** and **systems** to **refine raw materials** into **useful products** through chemical manufacturing.

06	Basic Science Skills	ChEg-M2016	31	Biological Engineering	ChEg3101	3/5
				Applied Inorganic chemistry	ChEg2202	3/5
				Applied and Inorganic Chemistry Lab	ChEg2203	1/2
				Computational Methods for Chemical Engineering	ChEg3107	3/5
				Applied Organic Chemistry	ChEg3112	3/5
				Organic Chemistry Lab	ChEg3113	1/2
				Analytical and Instrumental Chemistry	ChEg3217	3/5
				Analytical and Instrumental Chemistry Lab	ChEg3218	1/2
07	Process Industries	ChEg-M3018	10	Process Industries I	ChEg3214	3/5
				Process Industries II	ChEg4122	3/5

Chemistry and Biology Courses

Basic Principles and Calculations in Chemical Engineering		Process Control and Instrumentation
		Process Control and Instrumentation Lab
Chemical Engineering Fluid Mechanics		Internship
Chemical Engineering Thermodynamics I		
Chemical Engineering Thermodynamics II		
Mechanical Unit Operations		Material Science and Engineering
Mechanical Unit Operation Lab		
Chemical Engineering Fluid Machines		Environmental Engineering Fundamentals
Fluid Machine and Fluid Mechanics Lab		
Applied Chemical Engineering Calculations		Principle of Food Process Technology
Reaction Engineering I (Kinetics)		
Reaction Engineering II (Reactor Design)		Introduction to Biochemical Engineering
Reaction Engineering Laboratories		
Heat and Mass Transfer		Process Equipment Design
Introduction to Transport Phenomena		Process Design and Economics
Thermal Unit Operations		Chemical Engineering Design Project
Mass Transfer Unit Operations		Refrigeration and Air Conditioning
Thermal and Mass Transfer Unit Operation Lab		Fundamentals of Industrial Maintenance and Safety
Basics of Academic Writing		

Computer Aided Process Design and Simulation
Sustainable Energy Technology
Process Modeling and Optimization
Energy Utilization and Audit
Heat Integration
Air Pollution and Control
Water and Wastewater Treatment
Solid and Hazardous Waste Management
Environmental Sampling and Analysis
Food and Beverage Technologies
Food Process Industries Quality Control
Meat and Dairy Industries
Extraction and Fermentation Industry
Biochemistry and Molecular Biology
Quality Control and Assurance
Philosophy of Science and Ethics

10% Laboratory Courses



Chemical Engineering

EXAMPLES

Cement industry



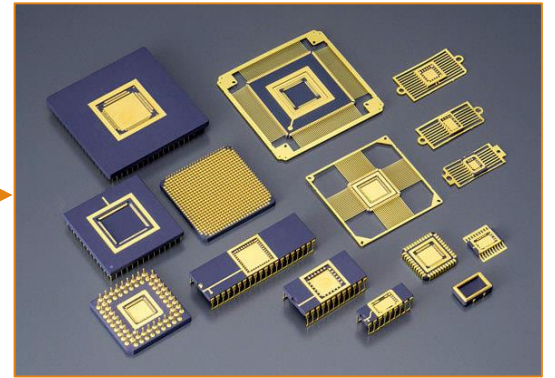
Paint industry



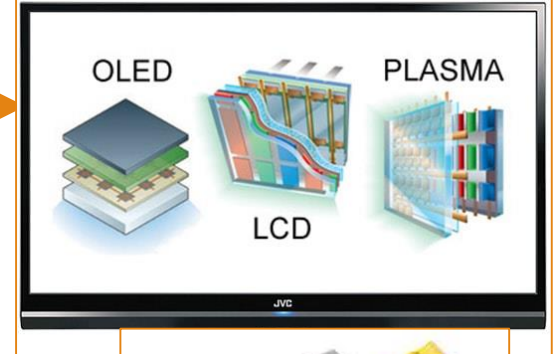
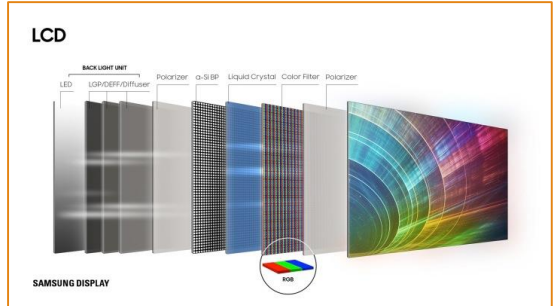
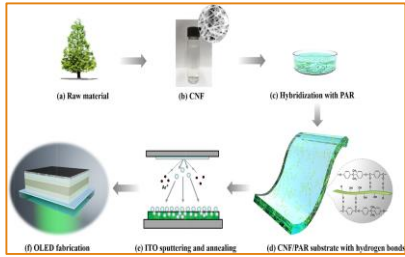
Paper industry



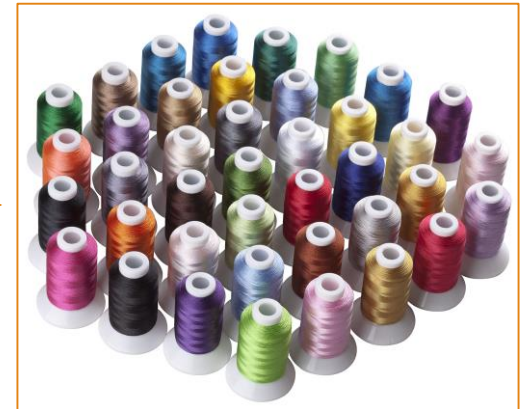
Computer Chips industry



Screen manufacturing industries



Polyester industry



Sugar industries



Beverage industries



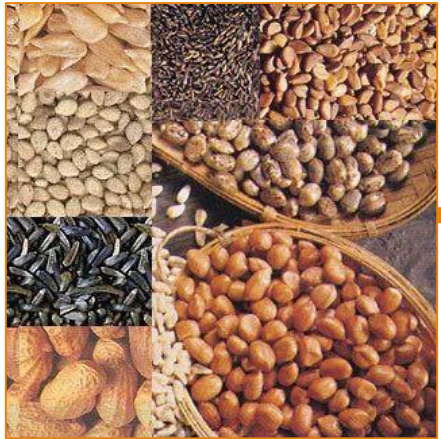
Food industries



Food industries



Food industries



Energy industries



Waste to Energy industries



Pharmaceutical industries



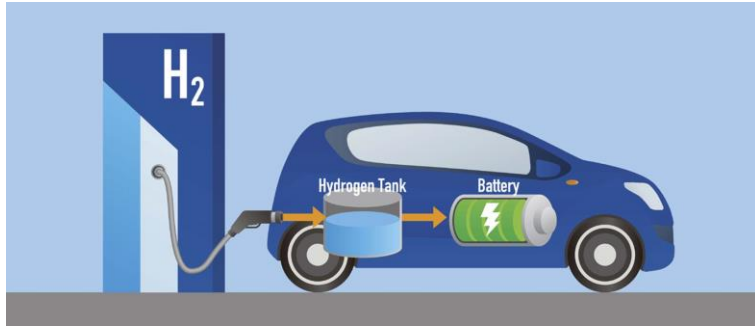
Petroleum industry



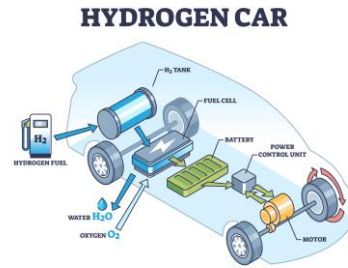
Plastic parts of products



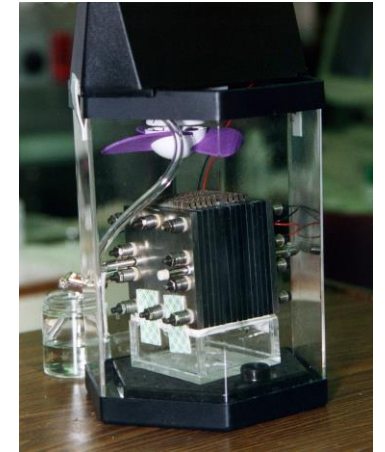
Future of Chemical Engineering -Examples



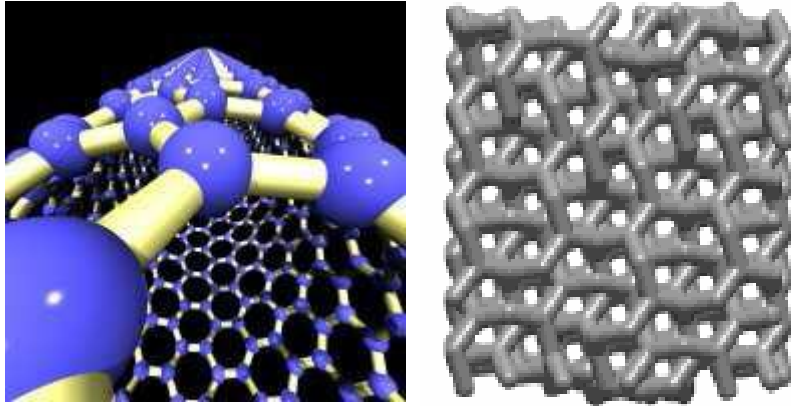
Hydrogen fuel



Biotechnology



Methanol Fuel Cells

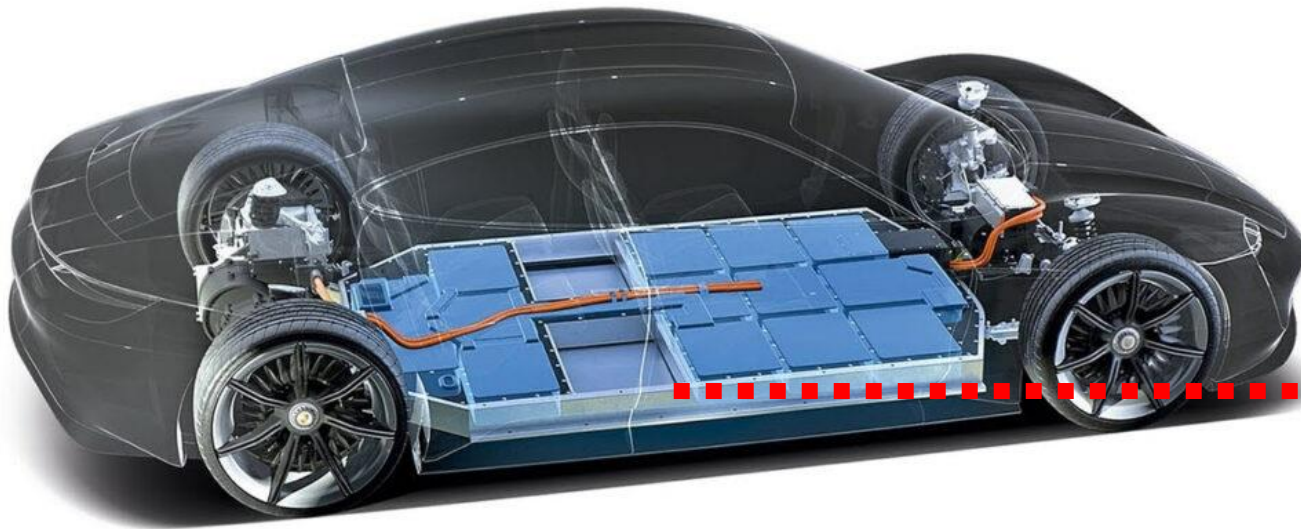


Nanotechnology



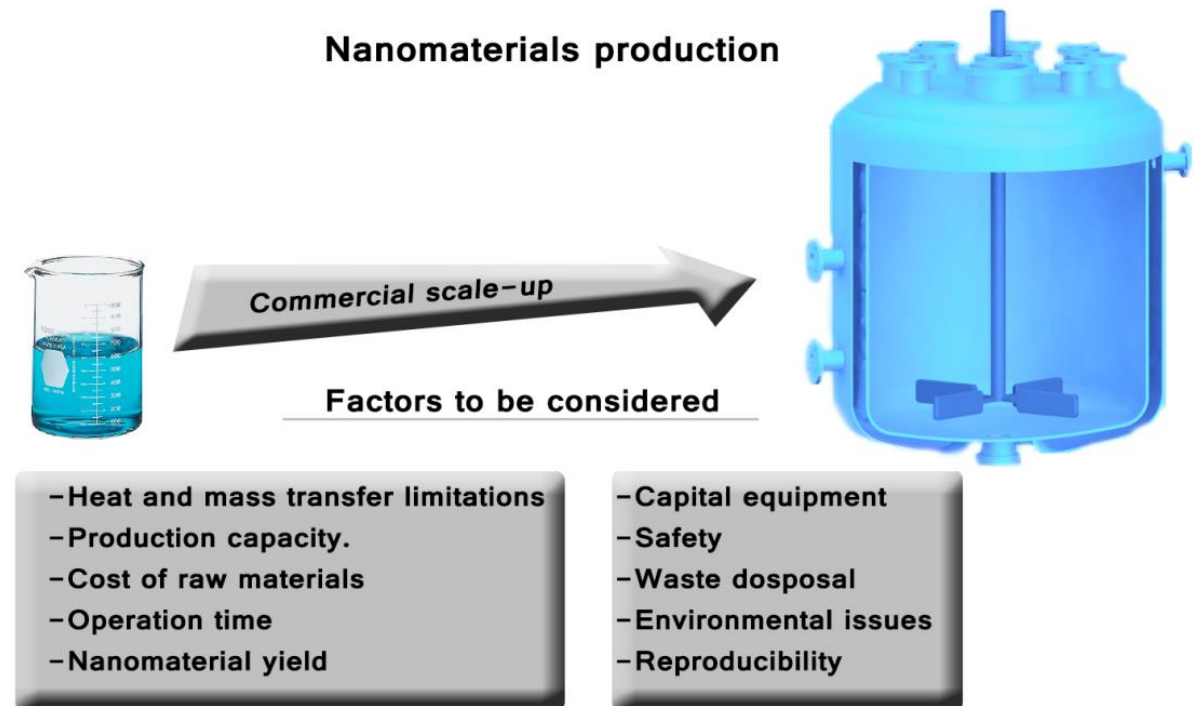
Clean Energy Environment

Electrical Vehicles Battery technology

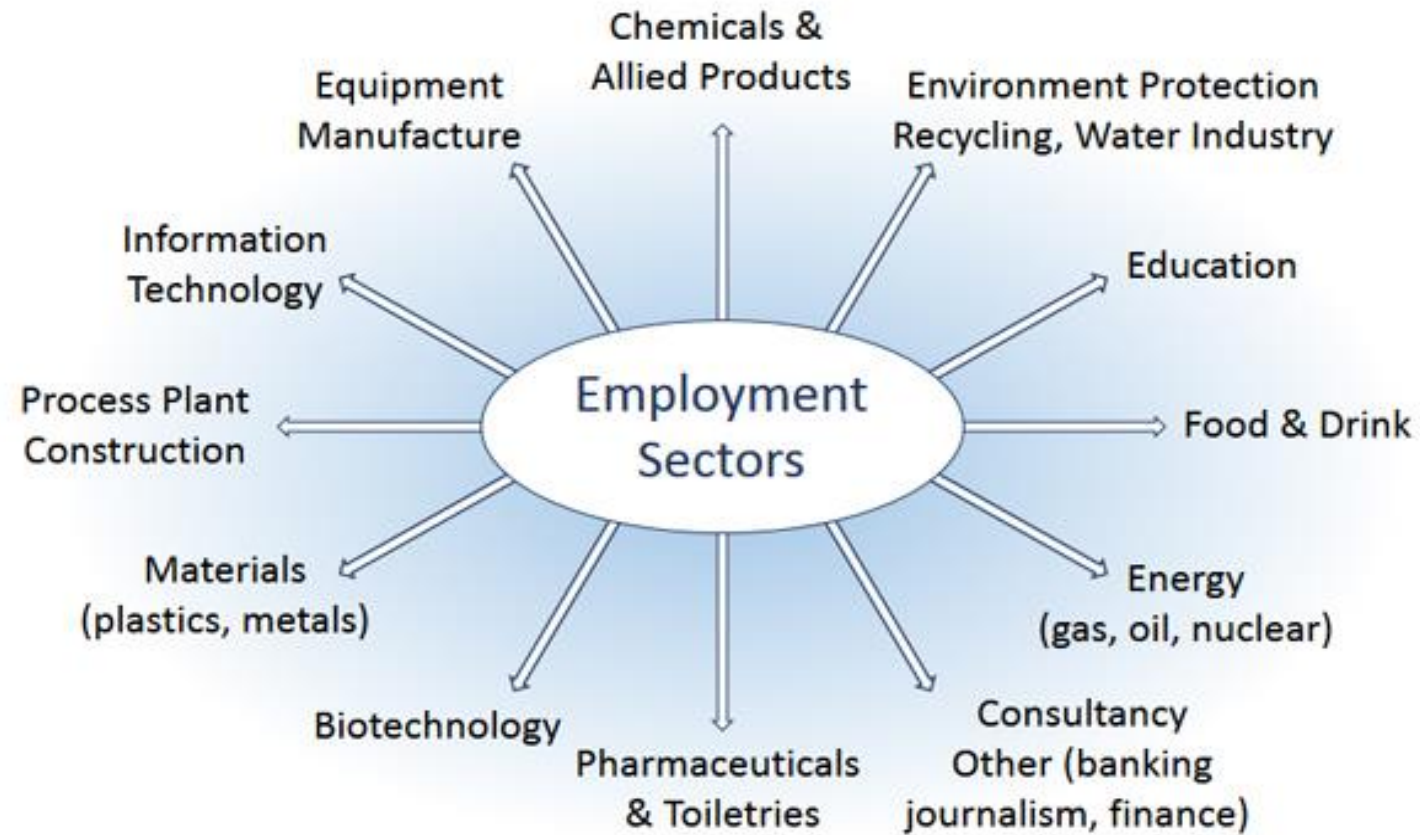


Chemical Engineering work?

❑ Chemical engineers work with the **smallest scale nanomaterials** in a **laboratory** setting through to developing **large-scale, industrial production systems**.



Professional Profile



Chemical Engineering Area of Specialization

- Process Engineering
- Food Process Engineering
- Environmental Engineering
- Material Engineering
- Biochemical Engineering
- Biomedical Engineering
- Sustainable Energy Engineering
- Pharmaceutical Engineering
- Petroleum Engineering
- Mineral Process Engineering
- Nuclear Engineering
- Armament Engineering



SCBE'S Resource (staff and Laboratory facility

Staff

Academic Rank	Number
Professor	4
Associate professor	5
Assistant Professor	13
Lecturer	46
Technical Assistant	8



Most of our course are integrated with laboratory work



Laboratories

- ❑ Chemical reaction engineering
- ❑ Mineral and Construction input material laboratory
- ❑ Thermal unit operation
- ❑ Mass transfer unit operation
- ❑ Mechanical unit operation
- ❑ Environmental engineering
- ❑ Food engineering
- ❑ Analytical Laboratory
- ❑ Biochemical Laboratory



International Partnership

- University of Cagliari, Canada
- Stellenbosch University , South Africa
- Hochschule für Technik und Wirtschaft (HTW) Berlin, Germany
- Case Western Reserve University, USA
- University of Toulouse, France.
- Cumhuriyet University, Turkey
- Deutsches Biomasseforschungszentrum (DBFZ, German Biomass Research Center), Germany
- STEMPower, USA
- Dow Chemical, USA
- China AID, China



Thank you

When writing the
story of your life,
don't let anyone
else hold the pen.