



The
University
Of
Sheffield.

Chemical
and Biological
Engineering

What is Chemical Engineering

Siddharth V. Patwardhan

Professor of Sustainable Chemical & Materials Engineering

Chemical and Biological Engineering,

S.Patwardhan@sheffield.ac.uk

www.svplab.com



**KEEP
CALM**

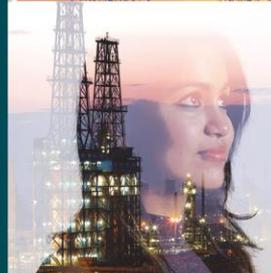
I'm a chemical
engineer

IChemE

Discovery STEM programme

7 February 2018

**Help
Transform
Tomorrow.**



Challenges faced by society



- Food & clean water
- Energy
- Medicines
- Increase standard of living
- Minimize environmental impact

Chemical engineers are well-equipped to address these issues!

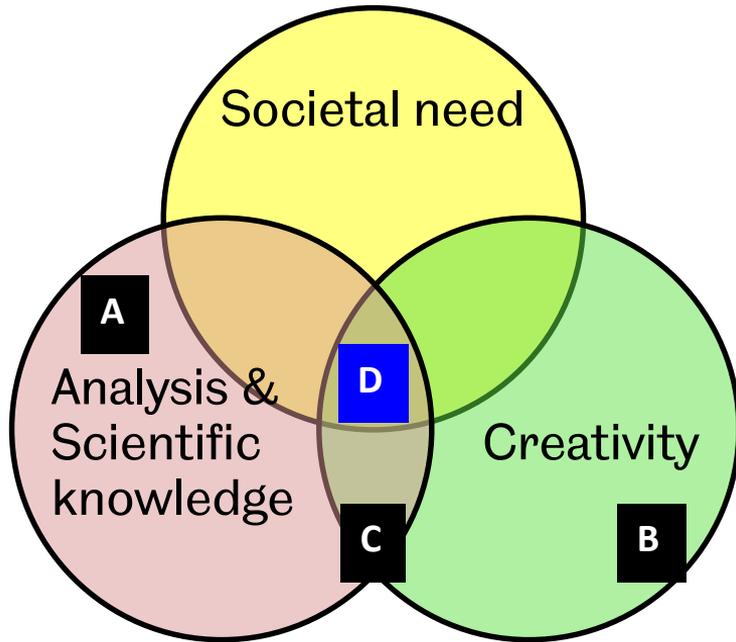


The
University
Of
Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

Engineering



A: Analytical and engineering science

B: Creativity from sudden intuitive leaps resulting in revolutionary advances.

C: Engineering design, “real world” problem solving.

D: Culmination of all 3.

This is the ideal role of engineering and the individual engineer.



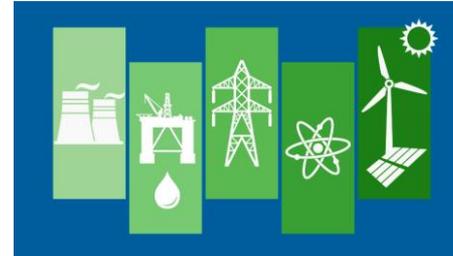
The
University
Of
Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

Chemical Engineers help the society

- Food & clean water
- Energy
- Medicines
- Increase standard of living
- Minimize environmental impact



The University
Of Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

What do Chemical Engineers do?

Turn raw materials into valuable products.



Qualities of a Chemical Engineer

- ❖ Detailed understanding of the “fundamentals”
- ❖ Creative in solving problems
- ❖ Communicate and work with others

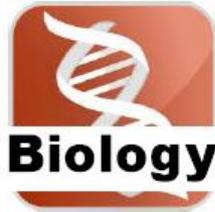
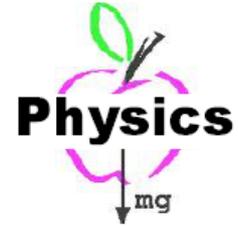
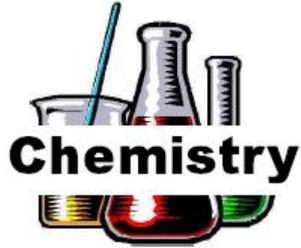


The
University
Of
Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

What are the fundamentals?



The
University
Of
Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

The jobs chemical engineers do



- Fabrics for the clothes.
- Fuels and energy.
- Microchips.
- Artificial organs.
- Food and drinks.



- Manufacture huge amounts
- Protect environment
- Help government
- New discoveries



The
University
Of
Sheffield.

Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

Chemical Engineers' role in and impact on the environment

Einstein: *"We can't solve problems by using the same kind of thinking we used when we created them"*

Chemical Engineers have a unique role to play

1. They have a direct effect on the **design & development** of products, processes and systems.
2. They also **impact on natural systems** through materials selection, project siting, and end-of-life product handling.



Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

What companies do Chemical Engineers work for?



LUCOZADE RIBENA
SUNTORY



TOTAL



YorkshireWater



Chemical
and Biological
Engineering

Help
Transform
Tomorrow.

Why choose Chemical Eng?



- Intellectual satisfaction / technological challenge
- Versatility
- Contribute to the world we live in
- Good salary
- Frequently find their way to upper management and policy making
- Opportunities to work overseas



Chemical
and Biological
Engineering

Help
Transform
Tomorrow.