

Engineering a sustainable world with chemical engineering

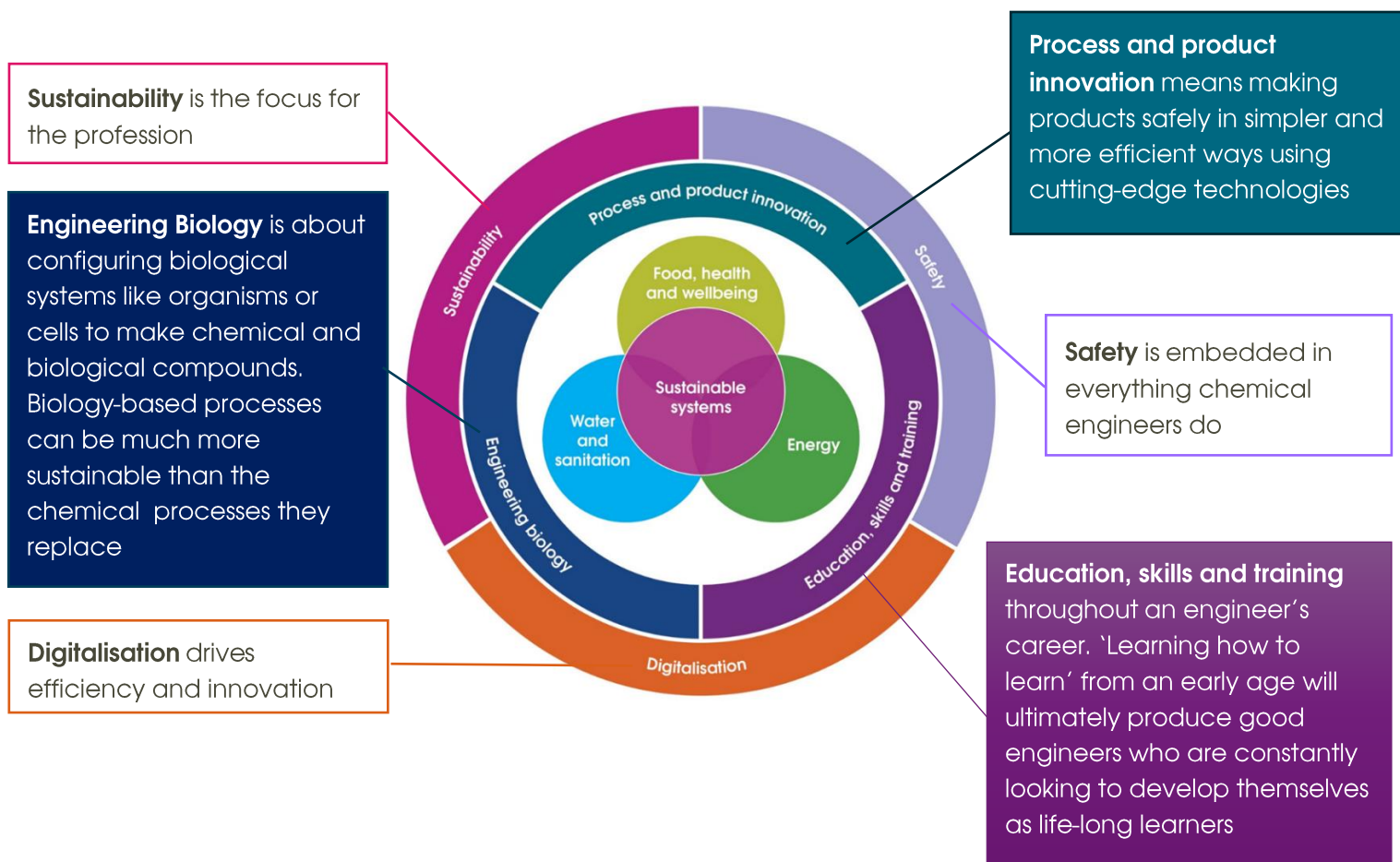
Explaining how chemical engineering addresses global challenges and relates to the subjects you teach and the careers advice you give

The Institution of Chemical Engineers, IChemE, has set out a strategy for the next 4 years that puts sustainable systems at the heart of chemical and process engineering. Alongside other professions, chemical engineers will play a vital part in addressing the challenges ahead. In particular, contributing to these United Nations Sustainable Development Goals (SDGs):



Sustainable Systems

Putting three key areas at the centre: food, health and wellbeing along with energy and water and sanitation helps chemical engineers design, develop and implement complex systems across industries and essential services in society. Let's take a closer look at what this means.



Challenges for these sectors

- **Food, health and wellbeing:** making food production more sustainable on a large scale, finding alternative sources of protein and innovating healthcare to help get medicines and healthcare to people
- **Energy:** managing the change to a low emissions future, reducing the amount of carbon dioxide being produced and scaling up renewables
- **Water and sanitation:** managing scarce water resources better and improving access to clean water

Key terms and what they mean

- **Circular economy:** resources and materials are reused many times instead of being extracted, used and then discarded
- **Systems thinking:** looking at complex systems and identifying relationships, patterns and interdependencies to identify potential conflicts and unintended consequences when solving problems

How GCSE subjects can contribute to a chemical engineer's knowledge and skills

Mathematics is the most important subject area students will study because it underpins every aspect of chemical and process engineering. Alongside a deep understanding of scientific principles, from physics, chemistry and biology, it is essential to have good practical skills. Working safely and working scientifically are key to becoming a chemical or process engineer.

Other GCSE subjects that can support a pathway into chemical and process engineering include business, economics, geography and law. For study at university or through an apprenticeship, students can be signposted to find out what subjects and grades are needed for A-level or equivalent qualifications.

Other skills that chemical engineers need

In addition to academic qualifications, chemical engineers need lots of other attributes like being creative, being a problem-solver, working well as part of a team, being organised and having an eye for detail. Inside and outside school, through different activities and clubs, students can develop some of these skills.

For more about chemical engineering

Go to www.icheme.org/discoverchemeng or use the QR code

Scan here to find out more



Watch IChemE's video [Engineering a Sustainable World](#) – the chemical engineering challenge to find out how chemical engineers see the world



Planning a careers fair? Would you like an IChemE chemical engineer to attend? Add your details using the QR code or link

<https://forms.office.com/e/SMQpUCL79F>

