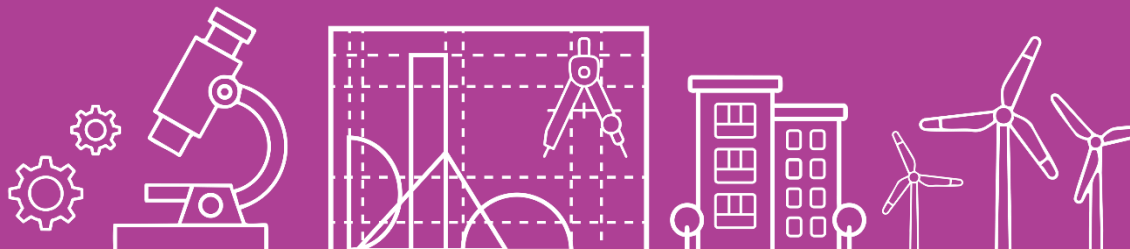


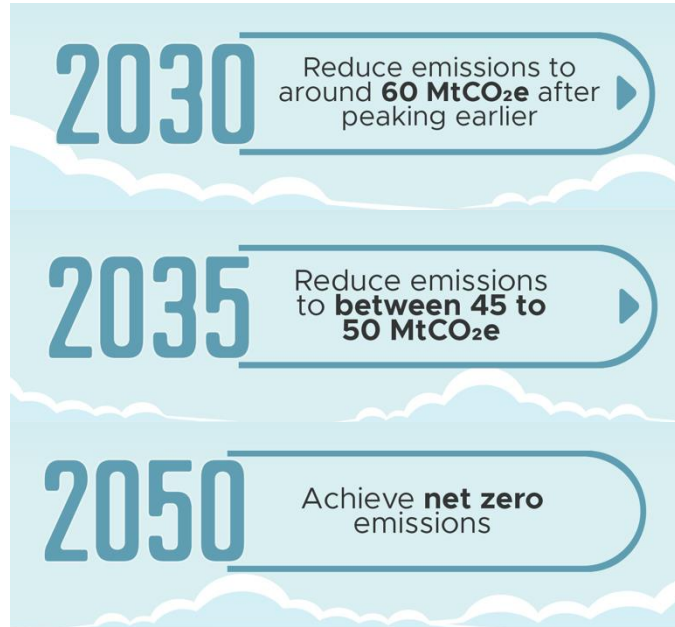
Driving Sustainability through Hydrogen and Low Carbon Technologies

By: Dr. Keshia S. Indriadi

Minor in Hydrogen and Low Carbon Technology

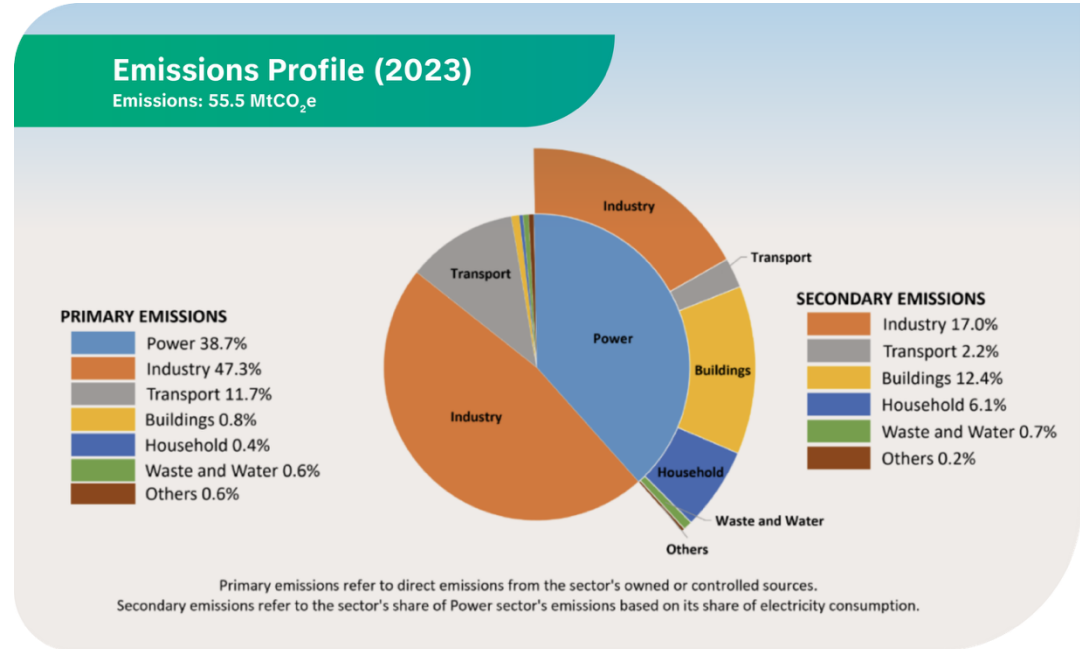


Singapore's Net Zero Targets



Source: NCCS Singapore

Where do emissions come from?



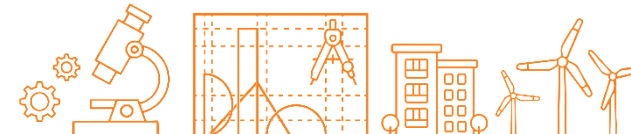
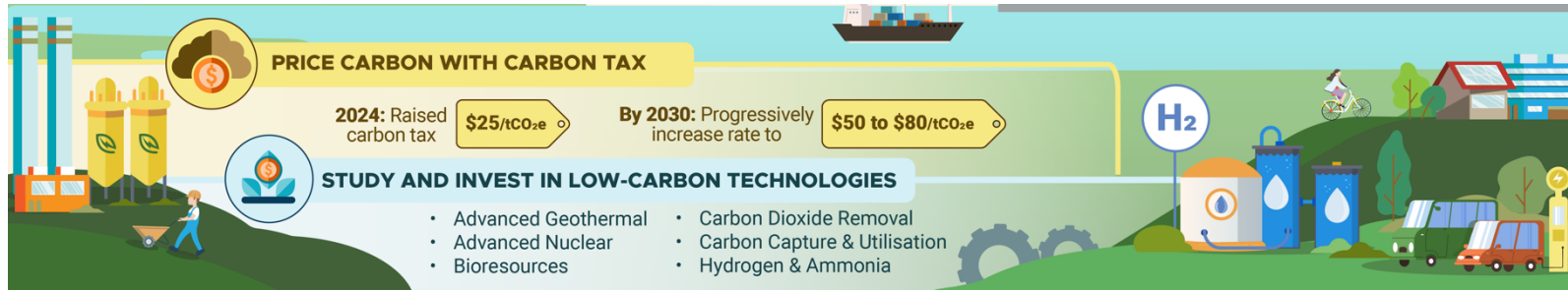
Source: Ministry of Trade and Industry Singapore

Challenges in decarbonizing Singapore

- Limited land area and natural resources
- Low wind speeds, low tidal range, no large river systems for hydropower
- High population density without hinterland
- Competing land and infrastructure needs



What will Singapore do to decarbonize?



Why take this Minor?

Explore One of the Fastest-Growing Global Sectors

Learn about clean hydrogen and low carbon technologies that power tomorrow's industries.



Go Beyond the Textbook

Gain exposure to real-world challenges through industry-led lectures and projects.

Work with Experts and Innovators

Connect with researchers at NUS and globally beyond.



Boost Your Future

Open doors to internships, research, and career paths in Singapore's green energy transition.



What will you learn in this Minor?

Knowledge on
**hydrogen
production,
storage, and
utilization.**

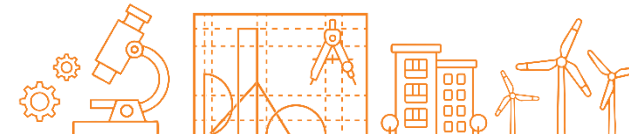
Understanding of hydrogen
technologies as **systems of
interconnected components**,
encompassing chemical, physical,
environmental and economical
aspects.

Understanding of
**regulatory, safety, and
ethical considerations** in
hydrogen technology
applications.

Basic **simulation tools
and methods** to
understand and analyse
hydrogen systems.

Effective
communication of
complex concepts to
diverse audiences.

Interdisciplinary
teamwork.



Requirements for the Minor

20 Units: Three Compulsory Courses + Two Electives

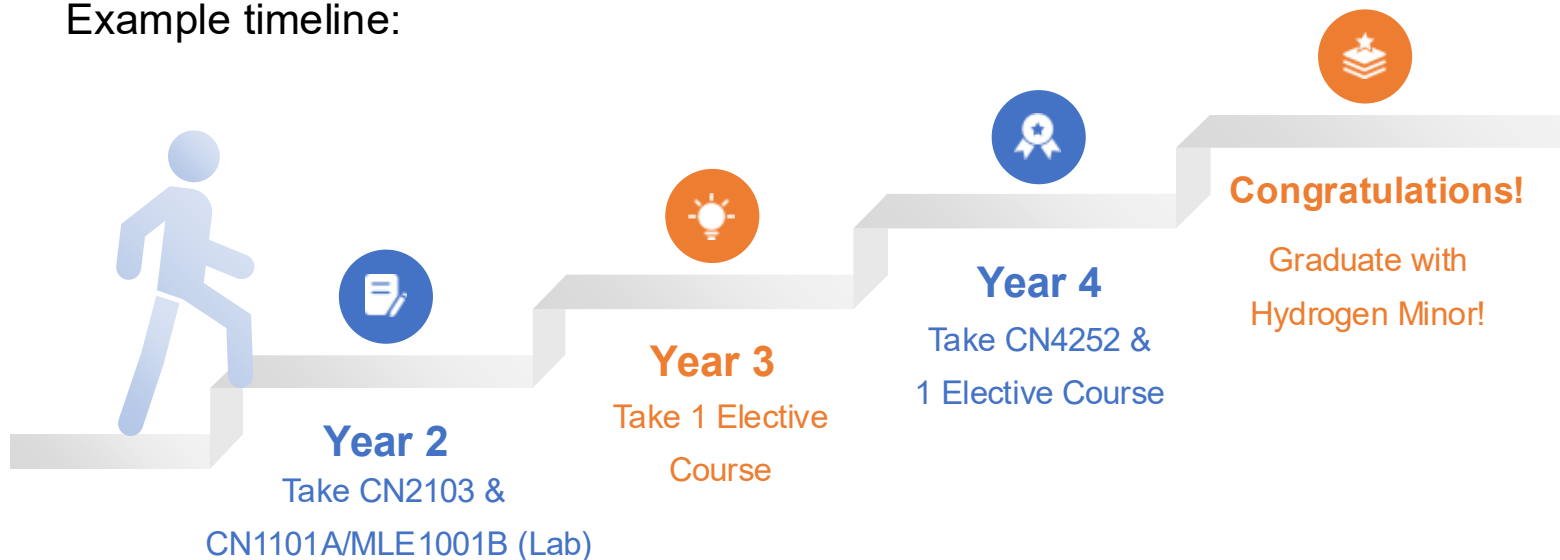
Compulsory (12 Units)	CN1101A Chemical Engineering Principles and Practice OR MLE1001B Materials Science & Engineering Principles & Practice
	CN2103 Material and Energy Balances
	CN4252 H ₂ and Low Carbon Technologies: Industry Perspectives
Electives (8 units) i.e., choose two from this list	CN4235 Chemical Process Safety
	CN5190 Hydrogen Energy and Technology
	MLE2102 Thermodynamics and Renewable Energy Technologies
	MLE4210 Materials for Energy Storage and Conversion
	MLE4221 Emerging Materials for Renewable Fuels and Clean Water



Flexible Timeline for Minor Completion

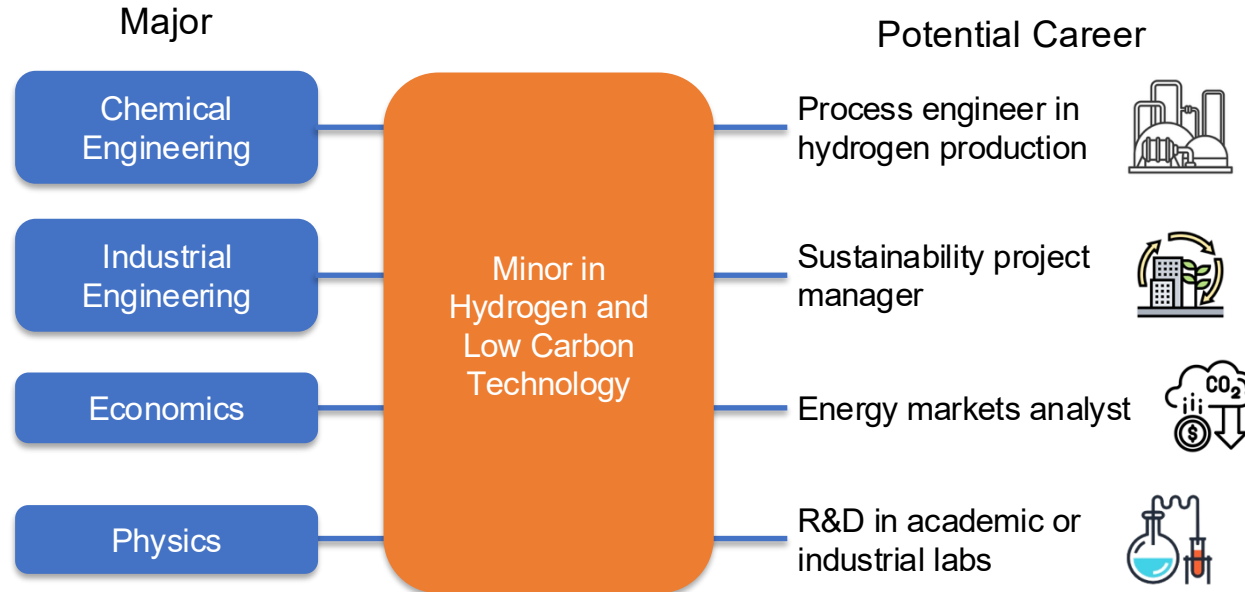
Complete 5 courses at your own pace – *no rush!*

Example timeline:

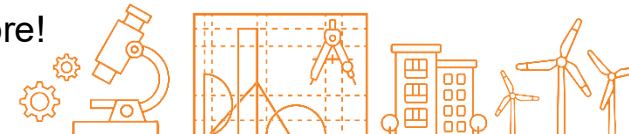


Example Career Paths with the Minor

There is a growing demand for experts in hydrogen and low carbon tech.



...And many more!



Example Industries Related to the Minor

Guest Lecturers of CN4252



Manufacturing



We create chemistry

Chemicals



Data centre operations



Turbine manufacturer



Construction



Sustainable aviation fuels



Government



Maritime and shipping



Start-up

Who is this Minor for?

This Minor is open to all undergraduate students at NUS. No separate application, host department approval, or pre-requirement for major/degree is needed.

How to apply for this Minor?

Students will be able to declare the minor themselves in the Academic Plan Declaration Exercise (APAD) before CourseReg begins – by their 5th Academic Plan Declaration exercise.

Students may double-count up to 8 units with their Major.



Thank You

To find out more visit:

cde.nus.edu.sg/chbe/undergraduate/beng-che/minor-in-hydrogen-and-low-carbon-technology/



hydrogen.nus.edu.sg



hydrogen_innovations@nus.edu.sg

