

18 - 24 May 2025: SOUTH WESTPHALIA INTERNATIONAL SUSTAINABILITY WEEK

Affordable and Clean Energy (SDG 7): Hydrogen as a clean energy carrier					
Short name	Workload	Credit Points	Preparatory	Face-to-Face	Conclusion and final project work
H2E	90 h/ 150 h	3 ECTS/ 5 ECTS	6 x 3 h (online) + 12 h self-study phase	International Sustainability Week	2 x 3 h (online) + 12 h self-study phase (project work for extra 2 ECTS)

1	Group size	International students	German students
		4 to 6	4 to 6

2	<p>Contents</p> <p>Hydrogen is regarded as one of the most important energy carriers for a sustainable energy supply. In this module we will discuss the following subjects and questions:</p> <ul style="list-style-type: none"> ▪ Characteristics of hydrogen, advantages and challenges in connection with hydrogen as an energy carrier. ▪ What role can hydrogen play in a sustainable energy supply? How can hydrogen contribute to the UN Sustainable Development Goals (SDGs)? ▪ Stationary and mobile applications for hydrogen. ▪ What is the status quo of hydrogen use worldwide/in Europe/in Germany? <p>As a part of these discussions, we will gather experiences and facts regarding hydrogen use in the participants' home countries. Furthermore, we will try to identify topics for research and development in connection with hydrogen.</p> <p>During the International Sustainability Week, we will develop a demonstrator that illustrates the generation and technical use of hydrogen.</p> <p>The module contributes to the UN Sustainable Development Goals "Affordable and clean energy" (SDG 7) and "Climate Action" (SDG 13).</p>
3	<p>Learning outcomes</p> <ul style="list-style-type: none"> ▪ Comparative insight into hydrogen as an energy carrier and as a part of a sustainable energy supply. ▪ Theoretical and practical knowledge about hydrogen applications. ▪ Improvement of the ability to work in international teams.
4	<p>Teaching and learning methods</p> <ul style="list-style-type: none"> ▪ Online teaching consisting of short lectures, group work/discussions, presentations and self-study phases in the preparatory phase; ▪ Laboratory work during the International Sustainability Week; ▪ Online group work and self-study phases after the International Sustainability Week. ▪ Field trip.
5	<p>Prerequisites</p> <ul style="list-style-type: none"> ▪ Basic knowledge of chemistry and/or thermodynamics.
6	<p>Requirements for the awarding of credits</p> <ul style="list-style-type: none"> ▪ On-time submission of preparatory work: independent reading of assigned course material; short presentation of a selected topic from the preparatory phase; documentation of country-specific examples and of research and development topics. ▪ Active participation in online courses and the International Sustainability Week, including the laboratory project.

	<ul style="list-style-type: none"> ▪ 8–10-page reflection paper on the laboratory project work to be submitted on time. ▪ 5 ECTS only: Report on a selected topic from the course to be submitted on time.
7	Module responsible / Lecturer <ul style="list-style-type: none"> ▪ Mark Schülke, Alexander Schaaf
8	Literature <ul style="list-style-type: none"> ▪ A. Züttel, A. Borgschulte, and L. Schlapbach, editors: Hydrogen as a Future Energy Carrier. Wiley-VCH, Weinheim, 2008.
9	Additional information (to complete: Link to the associated a Moodle-course)