



Module Title	
Pathways to Net Zero GHG Emissions in the Mobility Sector	
Code	MCCf143
Degree Programme	Master of Science – Circular Innovation and Sustainability
ECTS Credits	3
Workload	90 hours <ul style="list-style-type: none"> • 14 hours contact teaching • 76 hours self-study
Module Coordinator	Name: Dr. Priscilla Caliandro Phone: +41 (0) 31 848 31 80 Email: priscilla.caliandro@bfh.ch Address: BFH – TI, Aarbergstrasse 46, 2503 Biel-Bienne
Lecturers	<ul style="list-style-type: none"> • Prof. Dr. Joachim Huber; AHB • Prof. Peter Affolter; TI • Ueli Kramer; SBB • Bernhard Riegel; BERNMOBIL • Sabine Rapold; Kruppen Kerzers AG
Entry Requirements	None
Competencies upon Completion	After completing the module, students will be able to: <ul style="list-style-type: none"> • recognize dynamics in the complex system of mobility and the circular economy; • understand the effects of measures and apply them to concrete problems; • identify potential of sustainable and integrated mobility solutions; • develop innovative, intelligent, and marketable products or services as well as to develop and implement new business models; • understand the global context of the mobility sector transformation and its direct relation to the energy system and resources; • distinguish different technical solutions for drivetrains in individual and public transport systems for road, rail, and air; • analyse mobility related problems and recognize the potential of transformation towards a circular economy; • evaluate the potential of digitalization for the mobility system.
Content	<p>A well-functioning global mobility system is central to the economy and the well-being of society. However, the movement of people and goods requires space, infrastructure, and energy resources, and has a negative impact on the environment, especially as fossil fuels continue to dominate the mobility sector. This course will address various measures to improve the sustainability of transportation and mobility: Reducing excessive traffic, shifting to more energy efficient modes, improving energy conversion efficiency, and finally, replacing fossil fuels. Policy, pricing, appropriate use of digitalization, and consideration of human behavioural aspects play key roles in this transformation.</p> <p>The transformation to climate neutrality is a major challenge. Informed decisions, innovative technologies and business models, fair pricing, and a combination of long-term strategic planning and tactical flexibility to respond to unforeseen developments are crucial.</p>

Teaching and Learning Methods	<ul style="list-style-type: none"> • Flipped classroom • Contact teaching • Individual exercises • Blended learning • Excursion • Guest speaker
Competency Assessment	<p>Written Assignments – Individual work (70%)</p> <ul style="list-style-type: none"> • The students will reflect on each weekly topic by writing a 2-pages essay. • 4 weekly essays will be selected and combined, accounting for 70% of final grade. <p>Oral presentation – Group work (30%)</p> <ul style="list-style-type: none"> • During the final week, each group will deliver a 10-minute presentation outlining the most promising pathways to achieving zero-emission mobility solutions, encompassing topics covered throughout the course (30% of the final grade).
Mode of Repetition	<p>Should a student fail the module, they have one more attempt. They may either:</p> <ul style="list-style-type: none"> • Submit a new assignment (8-pages essay, 100%), defined by the <i>Module Coordinator</i>, for the next resit examination session. • Repeat the entire module next time it is offered.
Format	2 lessons per week over 7 weeks and 1 excursion
Attendance	Not mandatory
Module Type	Compulsory-Elective
Timing of the Module	Spring Semester, Calendar Weeks 08 to 14
Venue	Onsite Brückenstrasse 73, 3005 Bern
Literature	Literature will be provided before the start of the module via Moodle.
Language	English
Links to Other Modules	<ul style="list-style-type: none"> • MCCf133 Pathways to Net Zero GHG Emissions in the Energy and Chemical Sectors • MCCF153 Pathways to Net Zero GHG Emissions in the Food Sector
Last Update	February 2026