



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 • Christian Ochsenbein; SIPBB • Ueli Kramer; SBB • Bernhard Riegel; BERNMOBIL • Sabine Rapold; Krummen Kerzers AG
Entry Requirements	None
Learning Outcomes and Competences	<p>After completing the module, students will be able to:</p> <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 potentials for 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 potentials for a transformation towards a circular economy; • evaluate the potential of digitalization for the mobility system.
Module 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 over the complete sector: 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 will be crucial.</p>

Teaching / Learning Methods	<ul style="list-style-type: none"> • flipped classroom • contact teaching • individual exercises / reports • blended learning • field trips • guest lectures
Assessment of Learning Outcome	<p>The students will reflect on each weekly topic by writing a graded 2-pages essay.</p> <p>4 out of the 7 weekly essays will be selected/combined for the final grade.</p>
Conditions of assessment repetition	<p>In case of failure, students can either:</p> <ul style="list-style-type: none"> • Do a new assessment (8 pages-essay) for the next re-examination period. • Retake the full module next time it is offered. <p>NB: in MSc CIS, failed modules can only be repeated once!</p>
Format	2 lessons per week over 7 weeks
Attendance & Compulsory session	Not compulsory
Timing of the module	Spring Semester
Venue	On-site
Location	Bern (Biel-Bienne)
Bibliography	Literature will be provided before the start of the module.
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 • MCCF135 Pathways to net zero GHG emissions in the food sector
Last Update	May 2023