



Module Title	Circular use of materials
Code	MCCf173
Degree Programme	Master of Science – Circular Innovation and Sustainability
ECTS Credits	3
Workload	90 hours <ul style="list-style-type: none"> • 4 hours contact teaching • 68 hours self-study • 8 hours Excursion • 10 hours coaching and laboratory
Module Coordinator	Name: Prof. Dr. Frédéric Pichelin Phone: +41 (0) 32 344 03 42 Email: frederic.pichelin@bfh.ch Address: BFH – AHB, Route de Soleure 102, 2500 Biel-Bienne
Lecturers	<ul style="list-style-type: none"> • Prof. Dr. Nicolas Bueche; AHB • Aymeric David Niederhauser; TI
Entry Requirements	Prerequisite: <ul style="list-style-type: none"> • MCCf026 Bridging technology • MCCf443 Impact assessment Highly recommended: <ul style="list-style-type: none"> • MCCf113 Technological cycles: materials and processes • MCCf453 Circular design
Learning Outcomes and Competences	After completing the module, students will be able to: <ul style="list-style-type: none"> • apply the ideation and circular design principles; • develop circular materials and products; • predict and assess material properties; • analyse processes (environmental and energetical consideration).
Module Content	Due to their complexity or toxicity, many products and building materials are not easy to recycle, reuse or eliminate. This course will focus on the development of innovative materials (consumables and building materials) with the aim to substitute existing products, providing high quality and a lower or negligible environmental impact. The innovation will consist in using/or and combining renewable raw materials and/or recycled materials. Students will be guided through product development, from the ideation up to prototyping and testing (if relevant/possible). Circular design and the impact assessment will be at the core of the process. The production processes and their environmental impact (energy use and possible pollution) will be critically analysed.
Teaching / Learning Methods	<ul style="list-style-type: none"> • Flipped classroom • Project-based learning • Case studies • Group exercises • Excursions • Learning videos • Pitching

Assessment of Learning Outcome	<p>Oral assessment (Pitching and group moderation & discussion)</p> <ul style="list-style-type: none"> • group work 40% • individual contribution 60%)
Conditions of assessment repetition	<p>In case of failure, students can either:</p> <ul style="list-style-type: none"> • Realise a new assignment defined by the module coordinator at 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	<p>2 Lessons and Coaching per week over 7 weeks</p> <p>2 Excursions</p>
Attendance & Compulsory session	<p>A rate of 60% of the sessions, in particular excursions and laboratory work are compulsory.</p>
Timing of the module	<p>Autumn Semester</p>
Venue	<p>On-site</p>
Location	<p>Biel-Bienne</p>
Bibliography	<ul style="list-style-type: none"> • Bueche, N. (2011) <i>Evaluation des performances et des impacts des enrobés bitumeux tièdes</i>. Thèse EPFL Nr 5169, Lausanne: EPFL. • Pichelin (2014) <i>SNF Cocoboard Project</i> https://www.bfh.ch/de/forschung/referenzprojekte/cocoboards/
Language	<p>English</p>
Links to other modules	<ul style="list-style-type: none"> • MCCf113 Technological cycles: materials and processes • MCCf443 Impact assessment • MCCf453 Circular design
Last Update	<p>May 2023</p>