Module Title	Circular Use of Materials
Code	MCCf173
Degree Programme	Master of Science – Circular Innovation and Sustainability
ECTS Credits	3
Workload	90 hours • 4 hours contact teaching • 74 hours self-study • 4 hours excursion • 8 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, Solothurnstrasse 102, 2500 Biel-Bienne
Lecturers	• Aymeric David Niederhauser; TI • Prof. Aybike Öngel; AHB • Dr. Gabriel-Ionut Pascu; AHB • Dr. Sauro Bianchi; AHB
Entry Requirements	Prerequisite: • MCCf026 Bridging Technology • MCCf443 Impact Assessment Highly recommended: • MCCf113 Technological Cycles: Materials and Processes • MCCf453 Circular Design
Competencies upon Completion	After completing the module, students will be able to: • apply the ideation and circular design principles; • develop circular materials and products; • predict and assess material properties; • analyse processes (environmental and energetical consideration).
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 (wood, plastics, concrete and bitumen) with the aim to substitute existing products, providing high quality and a lower or negligible environmental impact. The innovation process will consist of using or even combining renewable raw materials and 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 and Learning Methods	• Laboratory work • Project-Based Learning • Flipped classroom • Case studies • Group exercises • Excursion • Learning videos
Competency Assessment	• Oral assessment: pitching, group moderation and discussion (40%) • Report on personal contribution and reflection (60%) Students who receive an insufficient overall grade of 3.5, are given the opportunity to carry out a *subsequent improvement* of written assignments defined by the module coordinator. The maximum overall grade that can then be obtained is 4. This still counts as the first attempt.
Mode of Repetition	Should a student fail the module, they have one more attempt. They may either: • Submit a new assignment (100%), defined by the *Module Coordinator*, for the next resit examination session - provided the student has actively participated in the group work throughout the course. • Repeat the full module next time it is offered.
Format	Four times 3 lessons distributed over 7 weeks and 1 excursion
Attendance	Not mandatory However, active participation in group work throughout the course is mandatory. A lack of commitment and/or participation in this group work can lead to exclusion from the *Competency Assessment* and therefore to the failure of the module.
Module Type	Compulsory-Elective
Timing of the Module	Autumn Semester, Calendar Weeks 47 to 51 and 02 to 03
Venue	Onsite | Solothurnstrasse 102, 2500 Biel-Bienne | Pestalozzistrasse 20, 3400 Burgdorf
Literature	• Bueche, N. (2011) *Evaluation des performances et des impacts des enrobés bitumeux tièdes*. Thèse EPFL Nr 5169, Lausanne: EPFL. • Pichelin (2014) *SNF Cocoboard Project* https://www.bfh.ch/de/forschung/referenzprojekte/cocoboards/
Language	English
Links to Other Modules	• MCCf113 Technological Cycles: Materials and Processes • MCCf443 Impact Assessment • MCCf453 Circular Design
Last Update	June 2024