



Module Title		Impact Assessment	
Code	MCCf443		
Degree Programme	Master of Science – Circular Innovation and Sustainability		
ECTS Credits	3		
Workload	90 hours		
Module Coordinator	Name: Dr. Matthias Meier Phone: +41 (0) 31 910 22 88 Email: matthiassamuel.meier@bfh.ch Address: BFH – HAFL, Food Science & Management Länggasse 85, 3052 Zollikofen		
Lecturers	<ul style="list-style-type: none"> • Ariane Reist; HAFL • Dr. Evelyn Marconi; HAFL 		
Entry Requirements	Prerequisite: <ul style="list-style-type: none"> • MCCf123: Biological Cycles: Natural Resources and Ecosystem Services Recommended: <ul style="list-style-type: none"> • MCCf113: Technological Cycles: Materials and Processes • MCCf133: Pathways to Net Zero GHG Emissions in the Energy and Chemical Sectors Optional: <ul style="list-style-type: none"> • MCCf313: Society and Technology Further requirements: <ul style="list-style-type: none"> • Understanding cause-effect relationships between emissions/pollutants and environmental impacts. • Basic knowledge of environmental challenges such as climate change, water pollution, ecosystem eutrophication, soil acidification, impacts on biodiversity and soil quality, etc. • Basic understanding of environmental modelling. • Basic understanding of impact assessment using the Life Cycle Approach. • Understanding of the concept of sustainable development, Agenda 2030 with the Sustainable Development Goals (SDGs). 		
Competencies upon Completion	After completing the module, students will be able to: <ul style="list-style-type: none"> • understand the principles of Life Cycle Assessment (LCA) and appraise the potential and limitations of the method for different applications; • correctly plan and carry out an LCA using software tools and inventory databases; • report an LCA in a scientifically sound and comprehensible manner; • understand how, from a product-based perspective, environmental and social impacts need to be interpreted and how LCA results contribute to the overall sustainability discussion; • demonstrate better social, self-management and group work skills. 		

Content	<p>In module MCCf443 you will acquire methodological competencies for Life Cycle Assessment (LCA), which is one of the most widely used methods of environmental and social sustainability assessment.</p> <p>Starting from the ecological and social sustainability dimension you will learn how to quantitatively assess the environmental and social impacts of products and services along their life cycle using environmental (E-LCA) and social life cycle assessment (S-LCA). You will conduct an LCA on a case study using common LCA software and inventory databases and acquire a profound understanding of how to interpret the results. You will gain insight into different applications of life cycle assessment from industrial to agricultural products. Further you will gain an overview of additional applications of life cycle thinking e.g., for economic aspects (life cycle costing / LCC) or the newest developments in LCA applications linking LCA impact categories to sustainable development goals (SDG-LCA) and referencing LCA results with planetary boundaries.</p>
Teaching and Learning Methods	<p>Most of the theoretical background you will elaborate yourself through self-study assignments on Moodle. The application of the method will then be trained and coached in groups during the lectures.</p> <ul style="list-style-type: none"> • Self-study • Lectures • Coaching group work
Competency Assessment	<ul style="list-style-type: none"> • Group report on LCA research case – individually graded (70%) • Oral presentation on group report – individually graded (30%) <p>Students who receive an insufficient overall grade of 3.5, are given the opportunity to carry out a <i>subsequent improvement</i> 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.</p>
Mode of Repetition	<p>Should a student fail the module, they have one more attempt.</p> <p>They may either:</p> <ul style="list-style-type: none"> • Submit a new assignment (individual report, 100%), defined by the <i>Module Coordinator</i>, for the next resit examination session. • Repeat the full module next time it is offered.
Format	2 lessons per week over 7 weeks and Coaching
Attendance	Not mandatory
Module Type	Compulsory
Timing of the Module	<p>Spring Semester, Calendar Weeks 17 to 23</p> <ul style="list-style-type: none"> • Preparation work starts in Calendar Week 13. • Oral examination in Calendar Week 24.
Venue	<p>Onsite Brückenstrasse 73, 3005 Bern</p> <ul style="list-style-type: none"> • Coaching onsite and online
Literature	<p>Some of the literature can be found on the Moodle page of the course.</p> <ul style="list-style-type: none"> • Curran, M (Ed.). 2017. Goal and Scope Definition in Life Cycle Assessment. Dordrecht: Springer. pp 170. https://link.springer.com/book/10.1007/978-94-024-0855-3 • Klöpffer, W. Grahl, B. 2014. Life Cycle Assessment (LCA): A Guide to Best Practice. Wiley-VCH Publishers. pp 440. https://www.wiley.com/en-us/Life+Cycle+Assessment+%28LCA%29%3A+A+Guide+to+Best+Practice-p-9783527655649 • Life Cycle Initiative and Social Life Cycle Alliance. 2022. Pilot Projects on Guidelines for Social Life Cycle Assessment of Products and Organizations. https://www.lifecycleinitiative.org/library/pilot-projects-on-guidelines-for-social-life-cycle-assessment-of-products-and-organizations-2022/

	<ul style="list-style-type: none"> • Ryberg, M W. Owsianiak, M. Richardson, K. Hauschild, M Z (2018): Development of a life-cycle impact assessment methodology linked to the Planetary Boundaries framework. In Ecological Indicators 88, pp. 250-262. https://doi.org/10.1016/j.ecolind.2017.12.065 • United Nations Environment Programme (UNEP). 2009. Guidelines for Social Life Cycle Assessment of Products. https://www.unep.org/resources/report/guidelines-social-life-cycle-assessment-products • United Nations Environment Programme (UNEP). 2021. Methodological Sheets for Subcategories in Social Life Cycle Assessment (S-LCA) https://www.lifecycleinitiative.org/library/methodological-sheets-for-subcategories-in-social-life-cycle-assessment-s-lca-2021/ • Weidema, B. Goedkoop, M. Meijer, E. Harmens, R. 2020. LCA-based assessment of the Sustainable Development Goals. 2.-0 LCA consultants and PRé Sustainability. https://lca-net.com/publications/show/lca-based-assessment-of-the-sustainable-development-goals/ • Willett, W. Rockström, J. Loken, B. Springmann, M. Lang, T. Vermeulen, S. et al. (2019). Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. In The Lancet 393 (10170), pp. 447-492. https://doi.org/10.1016/S0140-6736(18)31788-4
Language	English
Links to Other Modules	<ul style="list-style-type: none"> • MCCf453 Circular Design
Last Update	June 2024