



Master in Life Sciences

A cooperation between
BFH, FHNW, HES-SO, ZFH

Module Title	Nutrition Meets Technology
Module Code	MCLs325
Module	FNH-3
Degree Program	Master of Science in Life Sciences (MSLS)
ECTS Credits	5
Workload	150 h: Contact 65 h; Self-study 85 h
Module Coordinator	<p>Name: Stephanie Jeske</p> <p>Phone: +41 31 848 52 41</p> <p>Email: stephanie.jeske@bfh.ch</p> <p>Address: Bern University of Applied Sciences, School of Agricultural, Forest, and Food Sciences, Laenggasse 85, 3052 Zollikofen, Switzerland</p>
Lecturers	<ul style="list-style-type: none"> • Dr. Mario Arcari (BFH-HAFL) • Dr. Lisamaria Bracher (BFH-HAFL) • Dr. Christoph Denkel (BFH-HAFL) • Raffaele Guelpa (BFH-HAFL) • Dr. Stephanie Jeske (BFH-HAFL) • External experts
Entry Requirements	<p>General understanding of the following aspects is helpful:</p> <ul style="list-style-type: none"> • Processing of food • Composition of food products • Food chemistry • Nutritional aspects of food • Basics in physiology
Learning Outcomes and Competencies	<p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"> • explain how food processing can affect physiology, using examples; • analyse how different processing technologies affect the nutritional value of a product – and how to improve processes regarding nutritional quality; • suggest processing techniques for bioactive nutrients; • identify processing technologies in line with consumer needs and trends.
Module Content	<p>The module focuses on the influence of food processing on nutritional aspects of food and includes the following main aspects:</p> <ul style="list-style-type: none"> • Introduction: Consumer science as a driving force, healthy food-trends • Processing technologies and their influence on nutritional value: <ul style="list-style-type: none"> ○ e.g. thermal processing, high hydrostatic pressure treatment, pulsed electrical fields technology, fermentation, additive manufacturing, etc. ○ preserving healthy ingredients ○ decreasing harmful substances • Processing and formulation for bioactive nutrients <ul style="list-style-type: none"> ○ • Processing for targeted physiological effects, bioavailability of nutrients, and consumer-tailored foods, including for example the following topics: <ul style="list-style-type: none"> ○ increased tolerance (lactose-free, low allergic, gluten-free) ○ processes and ingredients for low-fat products ○ ○ restructured food e.g. for nutrition for the elderly, food fibres for imitation meat products, or microparticles and nanoparticles in food

	<ul style="list-style-type: none"> • Practical demonstrations (pilot plant and laboratory): processing of oat drink, application of enzymes and analysis of nutritional and technofunctional properties
Teaching and Learning Methods	<ul style="list-style-type: none"> • Lectures and expert inputs • Practical exercises and demonstration • Individual and group exercises on case studies supported by coaching • Self-study
Assessment of Learning Outcomes	<p>Assessment consists of:</p> <ul style="list-style-type: none"> • Presentation (45%) • Written exam, open book (55%)
Comments	<p>It is compulsory for students to attend the lectures by external lecturers, the practical demonstration and the excursion. You can find more information about compulsory sessions in the module schedule, which will be available on Moodle four weeks before the module starts.</p>
Bibliography	<ul style="list-style-type: none"> • Simpson BK, 2012. Food biochemistry and food processing (2nd edition). Wiley- Blackwell, Ames, Iowa, USA • Clark S, 2014. Food processing. Principles and applications (2nd edition). Wiley Blackwell, Chichester, UK • Recommendations will be given before the module starts.
Language	English
Last Update	06.01.2025/Stephanie Jeske

