



Module	Nutrition Meets Technology
Code	MSLS_FNH-3
Degree Program	Master of Science in Life Sciences (MSLS)
ECTS Credits	5
Workload	150 h: 75 h contact, 75 h self-study
Module Coordinator	<p>Name Dr. Katrin Kopf-Bolanz</p> <p>Phone +41 31 910 21 80</p> <p>Email katrin.kopf@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. Katrin Kopf-Bolanz (BFH-HAFL) • Dr. Christoph Denkel (BFH-HAFL) • Ulrike Brämswig (BFH-HAFL) • Dr. Michael Beyrer (HES-SO Sion) • Markus Vaihinger (BFH-HAFL)
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 Competences	<p>After completing the module students should be able to:</p> <ul style="list-style-type: none"> • Explain how food processing can affect physiology • Analyze 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 that go in line with consumer needs and trends
Module Content	<p>The module focuses on the influence of food processing on nutritional aspects of food including following main aspects:</p> <ol style="list-style-type: none"> a. Introduction: Consumer Science as driving force - Summary of needs concerning healthy food – trends, nutritional value b. Processing technologies and their influence on nutritional value (e.g. thermal processing, freezing/chilling, high hydrostatic pressure treatment, pulsed electrical fields technology, fermentation, spraydrying) <ul style="list-style-type: none"> => preserving of healthy ingredients => decrease of harmful substances (e.g. acrylamide, nitrosamine) c. Processing of bioactive nutrients <ul style="list-style-type: none"> ⇒ extraction, adsorption, separation d. Processing targeted physiological effects <ul style="list-style-type: none"> Bioavailability of nutrients Consumer-tailored food

	<p>=> increased tolerance (lactose-free, low allergic, gluten-free)</p> <p>=> low-fat, low-sugar, low-salt</p> <p>=> influencing food structure in regard to nutrition for the elderly – food printing</p> <p>=> trend to personalized food – omics technologies</p> <p>=> micro- and nano-particles in food and perception</p> <p>=> technologies of restructuring food fibres / meat imitation/ structuring of raw vegetable materials</p> <p>e. practical demonstration (pilot plant): processing of protein powder (concentration, membrane filtration, spray drying) – effects on nutrition</p>
Teaching / Learning Methods	<ul style="list-style-type: none"> • Blend of lectures, teamwork, practical exercises • Contact hours: <ul style="list-style-type: none"> ○ Lectures about: 50% ○ Exercises and supervised group work: 35% ○ Written exam and presentation: 15% • Self-study: <ul style="list-style-type: none"> ○ Pre-reading: 5 % (depending on pre-knowledge) ○ Assignment for self-study in between course-days: 45% ○ Presentation: 50 %
Assessment of Learning Outcome	<p>Assessment consists of:</p> <ul style="list-style-type: none"> • Presentation (45%) • Written exam (55%)
Bibliography	<ul style="list-style-type: none"> • Simpson BK, 2012. Food biochemistry and food processing (2nd ed.). Wiley-Blackwell, Ames, Iowa • Clark S, 2014. Food processing. Principles and applications (2 ed.). Wiley Blackwell, Chichester • Recommendations will be given prior start of module
Language	English
Last Update	22.01.2020 / Katrin Kopf-Bolanz