Module Title	**Optimisation of Production Systems in Agriculture – Nutrient Fluxes and their Optimisation at Different Levels**
Module Code	MSLS_AF-23
Degree Programme	Master of Science in Life Sciences (MSLS)
ECTS Credits	5
Workload	150 h: Contact 55 h; Group Exercises 40 h; Self-study 55 h
Module Coordinators	**Name** Prof. Dr. Andreas Keiser, Prof. Dr. Beat Reidy, Thomas Kupper, Dr. **Lea Frey** **Phone** +41 31 848 67 25 **Email** lea.frey@bfh.ch **Address** Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences, Laenggasse 85, 3052 Zollikofen
Lecturers	• Prof. Dr. Andreas Keiser • Prof. Dr. Beat Reidy • Thomas Kupper • Federico Ghione • Dr. Lea Frey • Guest lecturers
Entry Requirements	None
Learning Outcomes and Competencies	After completing the module, students will be able to • understand the basics of optimisation and its application to diverse agricultural production systems; • analyse and solve optimisation problems in agricultural production, selecting and applying appropriate methods and tools; • modulate the complexity of agricultural production systems to control them effectively and react to changes (decision-making tools); • reflect critically on and discuss the results of optimisation, and propose suitable measures and control instruments.
Module Content	This module examines nutrient flows and addresses the following topics using relevant agricultural examples: • Description and analysis of selected production systems. • Overview of relevant optimisation approaches, methods, and tools. • Introduction and discussion of specific optimisation issues in animal and plant production systems. • Students will be assigned a case-study farm on which to optimise selected production-system processes with the use of appropriate tools and present the results orally.
Teaching and Learning Methods	Lecturers will provide introductions and overviews of approaches, methods and tools accompanied by exercises and coaching in learning groups. The module includes seminars on concrete examples involving stakeholders. The main learning method is self-study in small student groups using case study examples. In a final seminar, student groups will present the results of their case studies.

Assessment of Learning Outcomes	1) Written exam (50%) 2) Oral seminar presentation of the nutrient flows of a selected farm and their optimisation possibilities (50%)
Bibliography	Case study-specific documentation and literature will be uploaded on Moodle beforehand.
Language	English
Comments	Introductory events, excursions and presentations are mandatory for all students. You will find detailed information on mandatory sequences on Moodle four weeks before the module starts.
Last Update	13.02.2024