



<b>Module</b>	<b>Optimisation of Production Systems in Agriculture and Forestry</b>
<b>Code</b>	MSLS_AF-23
<b>Degree Program</b>	Master of Science in Life Sciences (MSLS)
<b>ECTS Credits</b>	5
<b>Workload</b>	150 h: Contact 55 h; Group Exercise 10 h; Self-study 85 h
<b>Module Coordinator</b>	<p><b>Name</b> Dr. Andreas Keiser</p> <p><b>Phone</b> +41 31 910 21 50</p> <p><b>Email</b> <a href="mailto:andreas.keiser@bfh.ch">andreas.keiser@bfh.ch</a></p> <p><b>Address</b> Bern University of Applied Sciences, School of Agricultural, Forest and Food Sciences, Laenggasse 85, 3052 Zollikofen</p>
<b>Lecturers</b>	<ul style="list-style-type: none"> <li>• Dr. Andreas Keiser</li> <li>• Dr. Beat Reidy</li> <li>• Dr. Fabio Mascher</li> <li>• Dr. Mamardashvili Phatima</li> <li>• Dr. Roger Robyr</li> <li>• Gaspard Dumollard</li> <li>• Thomas Kupper</li> <li>• Guest lecturers</li> </ul>
<b>Entry Requirements</b>	<i>None</i>
<b>Learning Outcomes and Competences</b>	<p>After completing the module students will be able to:</p> <ul style="list-style-type: none"> <li>• comprehend the rationales of optimisation and simulation and their application to production systems in agriculture and forestry;</li> <li>• analyse and solve optimisation problems in agriculture and forestry production systems, choosing and using adequate methods and tools;</li> <li>• modulate the complexity of A&amp;F production systems in order to steer them effectively and to react on changes (decision making tools);</li> <li>• critically reflect and discuss the results of the optimisation and suggest adequate measures and monitoring instruments.</li> </ul>
<b>Module Content</b>	<p>The module will deal with the following topics by drawing on examples from agriculture and forestry:</p> <ul style="list-style-type: none"> <li>• Description and analysis of selected production systems and their framework conditions.</li> <li>• Overview of possible optimisation approaches, methods and tools.</li> <li>• Introduction and discussion of four concrete optimisation problems in animal, crop and forest production systems (case studies).</li> <li>• Students select a topic in A&amp;F, optimise selected parts of the corresponding production system with adequate tools and prepare an oral presentation.</li> </ul>
<b>Teaching / Learning Methods</b>	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.
<b>Assessment of Learning Outcome</b>	<ol style="list-style-type: none"> <li>1) Written exam (50%)</li> <li>2) Oral seminar presentation of the optimisation for a selected topic (50%)</li> </ol>

<b>Bibliography</b>	Case study specific documentation will be uploaded on Moodle before the course.
<b>Language</b>	English
<b>Comments</b>	The four case studies in the module and the final seminar with the presentations are compulsory for students. For details on compulsory sequences, please check the detailed schedule of the module, which will be uploaded 4 weeks before the start of the module on Moodle
<b>Last Update</b>	08.03.2023 / Andreas Keiser