



Master in Life Sciences

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

Module	Biology for Computational Scientists
Code	V5_16
Degree Program	Master of Science in Life Sciences (MSLS)
ECTS Credits	5 ECTS
Workload	150 h: ca. 40 h contact lessons; 20 h guided exercises; 90 h self-study
Module Coordinator	<p>Name Dr. Lukas Muri</p> <p>Phone +41 (0)58 934 53 14</p> <p>Email Lukas.muri@zhaw.ch</p> <p>Address ZHAW Zürcher Hochschule für Angewandte Wissenschaften Life Sciences and Facility Management Einsiedlerstrasse 31 CH-8820 Wädenswil</p>
Lecturers	Dr. Lukas Muri + tbd
Entry Requirements	<p>This module provides an introduction to the fundamental concepts of biology necessary for understanding and applying computational methods in life sciences. It covers essential biology topics with an emphasis on developing a conceptual foundation that supports further study computational life sciences.</p> <p>No previous knowledge of biology is required.</p>
Learning Outcomes and Competences	<p>This module provides students with the essential conceptual and analytical foundations required to understand biological systems and processes relevant to the computational life sciences.</p> <p>Upon successful completion of the module, students will be able to:</p> <ul style="list-style-type: none"> • Explain the fundamental principles of biological systems, describing how living organisms are organized and how processes at the molecular, cellular, and organismal levels contribute to life functions. • Apply scientific reasoning and inquiry skills to interpret biological data, analyse experimental evidence, and understand how biological knowledge is developed through observation and experimentation. <p>Integrate knowledge across levels of biological organization to connect molecular and cellular mechanisms with higher-level biological functions and systems, forming a coherent conceptual understanding of life processes.</p>
Module Content	<p>This module introduces the essential concepts and principles of biology, providing a comprehensive foundation for students from non-biological backgrounds. It covers the molecular and cellular basis of life, mechanisms of inheritance and gene expression, and the evolutionary processes that shape biological diversity. Students will explore how biological systems are organized, how genetic information is</p>

	<p>transmitted and regulated, and how evolution provides a framework for understanding all aspects of life.</p> <p>The module combines theoretical instruction with practical laboratory training, where students gain hands-on experience in fundamental biological techniques. Elective components allow for exploration of selected areas connecting biological concepts to applications relevant to the computational life sciences.</p>
Teaching / Learning Methods	<ul style="list-style-type: none"> • Lectures ~30% • Guided exercises ~20% • Self-study ~50%
Assessment of Learning Outcome	<ul style="list-style-type: none"> • Mid-Term exam during the semester (20%) • Final exam (written) (80%)
Bibliography	<p>Lecture notes will be provided.</p> <p>Important additional literature will be provided on Moodle.</p>
Language	English
Comments	This module is aimed at students with a background in Computer or Data Science.
Last Update	17.11.2025