Master of Science (MSc) in Molecular Life Sciences specialisation in 

microbiology

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OBJECTIVES / ASSETS
Microbiology is a fascinating area of science, with many different aspects enabling excellent career prospects. Microbial sciences are very well represented in the Lausanne academic and hospital environment, including a National Centre of Competence in Research (NCCR) about microbiomes.

The objectives of the Master of Science (MSc) in Molecular Life Sciences (MLS) specialisation Microbiology are:

• To study through in-depth class work a wide range of advanced topics in microbial sciences, covering genetics and genomics, synthetic biology, plant and environmental microbiology, cellular microbiology, virology, microbial pathogenesis, bacteriology, fungal biology, yeast models, epidemiology and (clinical) diagnostics including drug resistance.
• To offer excellent opportunities for personal research topics in microbial sciences, notably in the fields mentioned above.
• To prepare you for careers in areas related to microbial sciences, such as diagnostics, biotechnology, academic or industry research, FAMH clinical microbiology, or environmental management and administration.
• To offer a stimulating environment to prepare you for fundamental and applied research.

CONTENT
The MLS specialisation in Microbiology shares two common activities with the other MLS students. This includes a unique experimental class during two semesters on (bacterial) genome sequencing, covering the latest sequencing technologies and hands-on bioinformatics for genome annotation, comparison and interpretation. It also includes a shared class on writing of a scientific review and research proposal.

The programme further offers a range of optional classes in concise block format (half-days) during two semesters, which cover specific major areas in modern microbiology research. Classes consist of literature reading and presentations, practicals, web-based study and paper discussions. A personalised curriculum can be assembled using additional optional classes from the other Master programmes, under the condition that a certain number of credits are chosen among microbiology classes. Class topics include: Bacterial Genomes and Genome Evolution, Microbiomes, Synthetic Biology, Immunology and Infectious Diseases, Advanced Microbial Genetics, Virus-Host Interactions, Fungal Virulence and Pathogenicity, Plant Interactions with Microbes and Insects, Anti-Infective Agents, Bacterial Virulence and Pathogenesis, Epidemiology of Human pathogens and Microbial Ecology, Chromosome Organisation and Dynamics, Microbes as Tools in Experimental Biology, Viral Pathogenesis and Emerging Viruses, Mechanisms and Principles of Yeast Cell Biology, Systems Microbiology.

Finally, the specialisation requires a First-step research project, which can be carried out in any area of the Master programme, and a Master project that must be conducted on an approved microbiology topic.