



<b>Module</b>	<b><i>In vitro</i> Diagnostics</b>
<b>Code</b>	MLS_S24
<b>Degree Program</b>	Master of Science in Life Sciences (MSLS)
<b>Cluster</b>	Bio/Pharma
<b>Specialization</b>	Applied Biosciences
<b>ECTS Credits</b>	4
<b>Workload</b>	120 h: Contact 56 lessons = 42 h ; Self-study 78 h
<b>Module Coordinator</b>	<p><b>Name</b> Prof. Dr. Jean-Manuel Segura</p> <p><b>Phone</b> +41 27 606 86 68</p> <p><b>Email</b> <a href="mailto:jmanuel.segura@hevs.ch">jmanuel.segura@hevs.ch</a></p> <p><b>Address</b> HES-SO Valais / Wallis, Institute of Life Technologies, Route du Rawyl 47, CH-1950 Sion 2</p>
<b>Lecturers</b>	<ul style="list-style-type: none"> <li>• Prof. Dr. Jean-Manuel Segura, HES-SO Valais / Wallis</li> <li>• Prof. Dr. Marc Pfeifer, HES-SO Valais / Wallis</li> <li>• External lecturers from hospitals, laboratory medicine and IVD industry</li> </ul>
<b>Entry Requirements</b>	Bachelor of Science in Life Technologies (orientation Biotechnology or Analytical Chemistry) or in a related course of study (Bachelor level)
<b>Learning Outcomes and Competences</b>	<p>The students will acquire the specialized background knowledge and know-how required to work in the field of <i>in vitro</i> diagnostics and biomedical analytics.</p> <p>After completing the module, the students shall be able to</p> <ul style="list-style-type: none"> <li>• Explain the <i>in vitro</i> diagnostics (IVD) product development process as well as the different market segments and trends.</li> <li>• Describe the various types of diagnostic tests and associated technologies with examples.</li> <li>• Identify clinical needs and their associated biomarkers.</li> <li>• Design an <i>in-vitro</i> diagnostic test using immunoassays or molecular diagnostics based on the requirements of its medical application.</li> <li>• Assess the applicability of a technology to meet specific requirements in <i>in vitro</i> diagnostics.</li> </ul>

<b>Module Content</b>	<ul style="list-style-type: none"> <li>• The IVD market</li> <li>• Biomarkers and their discovery</li> <li>• Requirements on IVD tests based on biomarker properties and clinical needs</li> <li>• Immunoassays for <i>in vitro</i> diagnostics</li> <li>• Sample collection and preparation for IVD</li> <li>• Point-of-care testing</li> <li>• Emerging techniques and current trends</li> <li>• Molecular diagnostics</li> <li>• Innovation in <i>in vitro</i> diagnostics</li> </ul>
<b>Teaching / Learning Methods</b>	<ul style="list-style-type: none"> <li>• Lectures, exercises and case studies</li> <li>• Active participation in the module is required</li> </ul>
<b>Assessment of Learning Outcome</b>	<p>Reports and presentations related to case studies, which must be validated to gain access to the module examination.</p> <ul style="list-style-type: none"> <li>• Final examination: oral exam (no documents allowed, 100 % of the final grade)</li> <li>• Reassessment: written exam (no documents allowed, within four weeks after the publication of the grades.)</li> </ul>
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>• Literature will be provided during lectures.</li> </ul>
<b>Language</b>	English
<b>Comments</b>	
<b>Last Update</b>	12.06.2020 / Jean-Manuel Segura