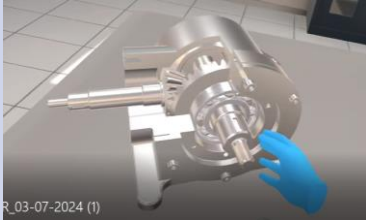

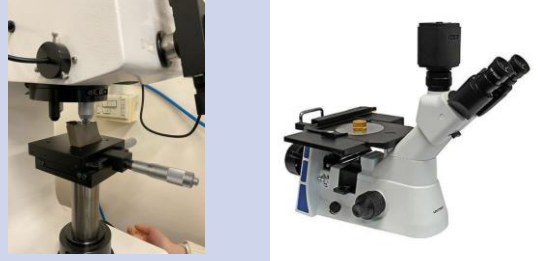



# Laboratory of Failure Analysis Methodology and Practice (12h + 3h Visit to a company)

Activity/experience	Instrument/equipment	Student's action	
<b>Virtual Reality Laboratory</b>	VR viewer	Direct involvement Disassemble a simulated system of gearbox, investigate the failure scenario	
<b>Experimental analysis of fracture surface inspection</b>	Stereomicroscopy	Direct use of the instruments belonging to the teaching laboratory of Materials Engineering for Industry 4.0	
<b>Experimental analysis of fracture surface inspection</b>	Microhardness and light optical microscopy observation after etching	Direct use of the instruments belonging to the teaching laboratory of Materials Engineering for Industry 4.0; metallographic etching under the hood.	

Activity/experience	Instrument/equipment	Student's action	
<p><b>Experimental analysis of fracture surface inspection</b></p>	<p>Scanning electron microscopy</p>	<p>Direct use of the instrument belonging to the teaching laboratory of Materials Engineering for Industry 4.0 + remote connection to Alessandria SEM, where expert operator will work under students instructions</p>	
<p><b>Wrap up of information gathered &amp; preparation of a final report</b></p>	<p>Brain</p>	<p>Putting together the information/clues gathered throughout the VR and the experimental activities</p>	<p>Discussion of the case illustrating the most likely failure scenario and the most likely root cause</p>
<p><b>Visit to a company laboratory working on failure analysis</b></p>			