

Module	<b>Economic and Environmental Sustainability of Transport Systems</b>
Area	<b>C - specialistic</b>
Objectives	- To acquire knowledge and tools for optimal and sustainable project planning solution
Classroom activities	40 hours
Contents	<p><b>EU and Italian regulations on sustainable mobility</b></p> <p><b>Part 1- Vehicle and consumption</b></p> <ul style="list-style-type: none"> <li>- Vehicle dynamic principles</li> <li>- Computation of the vehicle energy requirements</li> <li>- Recoverable energy</li> <li>- On-board energy accumulation technologies</li> <li>- Auxiliaries energy requirements and their impact on vehicle project</li> </ul> <p>Introducing homologation procedures</p> <ul style="list-style-type: none"> <li>- Standard homologation cycles</li> <li>- Emission regulations</li> <li>- Conventional propulsion systems</li> </ul> <p><b>Alternative Fuels</b></p> <ul style="list-style-type: none"> <li>- Natural gas and liquefied petroleum gas</li> <li>- Bio-fuels</li> <li>- Innovative propulsion systems</li> <li>- Vehicle electrification</li> </ul> <p><b>Part 2- Environmental sustainability analysis</b></p> <ul style="list-style-type: none"> <li>- Computation of the polluting emissions produced by road traffic</li> <li>- Survey and construction of the offer model</li> <li>- Surveys, construction and calibration of the demand model</li> <li>- Computation of transport system performances and software applications</li> </ul>
Laboratory activity	N/A
Expected learning outcomes	<ul style="list-style-type: none"> <li>- Development of competence in environmental risk analysis and polluting emission computation</li> <li>- Acquisition of competence in vehicle energy requirements evaluation based on its payload capacity.</li> <li>- In-depth knowledge of propulsion system choice options</li> <li>- Competence in the evaluation of the polluting emission quantity of the vehicle based on its propulsion system</li> <li>- Competence in the adjustment of the environmental impact caused by the type of fuel being used</li> </ul>
Credits (ECTS)	4