



**ANNEX 2.11**  
**DEGREE PROGRAM DIDACTIC REGULATIONS**  
**AUTONOMOUS VEHICLE ENGINEERING**  
**CLASS LM-33**

**School:** Polytechnic School of Engineering and Basic Sciences

**Department:** Industrial Engineering

**Didactic Regulations in force since the academic year 2024-2025**

<b>Course:</b> SENSOR DATA FUSION AND MEASUREMENT UNCERTAINTY MANAGEMENT		<b>Teaching Language:</b> English	
<b>SSD (Subject Areas):</b> ING-IND/12		<b>CREDITS:</b> 12	
<b>Course year:</b> I		<b>Type of Educational Activity:</b> B	
<b>Teaching Methods:</b> In-person			
<b>Contents extracted from the SSD declaratory consistent with the training objectives of the course:</b> "The SSD studies tend to develop research and expertise on methods of analysis, design and testing of systems for the measurement of mechanical and thermal quantities for both science and industrial applications, including those related to human well-being. In general, they address problems concerning the integrated design of tools for the monitoring, diagnosis and control of any system affected by mechanical and thermal quantities. Therefore, in addition to general metrology and specific instrumentation skills, skills related to the operation of the equipment to be tested, the systems to be monitored and the systems to be controlled are required."			
<b>Objectives:</b> The learning objective of the integrated course is providing students with the capability of defining, implementing, and assessing navigation devices integrating different measurement sensors suitably fused to overcome typical limitations. In particular, the module Smart Sensors and Measurement Uncertainty is intended to provide the general knowledge about measurement systems and sensors as well as their metrological characteristics. Moreover, uncertainty estimation in direct and indirect measurements according to the current recommendation must be mastered by the students. The module Sensor Data Fusion is intended to present, from both theoretical and experimental point of view, methods, and algorithms for acquired data processing. Moreover, particular attention will be paid to the real-time data transmission and processing from the smart sensor realized by means of an embedded system and an external high-performance computational unit, such as digital signal processor or personal computer.			
<b>Propaedeuticities:</b> None			
<b>Is a propaedeuticity for:</b> None			
<b>Types of examinations and other tests:</b> The exam is carried out by means of combination of written and oral examination as well as practical tests and project discussion.			