7.a Design virtual testing and validation using automatic and simulation tools

Functional Area: R&D/Op&Log

Assessment criteria	Knowledge
LO7a.1. Designs prototypes and mechanisms of mechatronic systems, using specific programs for three-dimensional simulation. • Observe and comment on a drawing/specification, also in English, (is it complete, all info contained, something additional should be required?), and make an example of how a virtual test could be carried out • Design and realize virtual test protocols/models for testing a prototype, using the proper tools (CAD/CAM/CAE) • Based on a real example of a process/product, describe its overall function and the interrelationship amongst the various electromechanical components (through a flow diagram), also through a brief written summary	• Knowledge of modelling tools • Knowledge of material (physical, electromagnetic characteristic…) • Understand parameters at the basis of automatic functions • Be able to analyse different solutions in a methodical way including interpretation of experimental data, literature • Understand the main functions of product/process
	Skills
	• Properly size/dimension components from form/fit/function aspects • Suggest appropriate techniques for the process • Be proficient in the use of SW tools (CAD tools, CFD tools, model-based tools…) • Formalize the variables on function (physical/process) • Formalize the interaction amongst the variables/functions • Represent (through drawings, Workflow, automatic tools) the interactions and dynamics amongst functions/components • Validate the correct input/output relationship • Select proper tools and understand their capability and limitations
	Transferable skills

	- Understand descriptions, specifications, manuals and other info typical of the profession in English and prepare them for next phase of project/Customer in understandable manner - Ability to communicate effectively, orally and in writing with "engineering" community and with "society", extrapolating concepts for "non-experts" through an abstraction approach