SYLLABUS ECCC

MODULE: **CS M4** ROBOT PROGRAMMING
LEVEL: EXPERT (**D**)

The examination of this module includes all issues from basic (**C**) extended to the competences set out below.

GROUP OF COMPETENCE	COMPETENCIES WITHIN THE ECCC STANDARD	
1.	**MSRDS: Visual simulation environment**	1.1.	Opening and saving scenes
		1.2.	Adding, deleting, and moving items
		1.3.	Creating screenshots
		1.4.	Monipulating the camera is
		1.5.	Modifying the physical parameters of the simulated environment
2.	**Advanced Topics of Movement**	2.1.	Movement in Cartesian coordinates
		2.2.	Movement in polar coordinates
3.	**Advanced topics in the navigation**	3.1.	Methods of avoiding obstacles
		3.2.	Algorithms of path planning
4.	**Advanced topic of communication**	4.1.	PC2NXT
		4.2.	NXT2NXT
		4.3.	Mobile2NXT
5.	**Issues of materials strenght in robotics**	5.1.	Forces and moments of force
		5.2.	Compression
		5.3.	Bending and Streching
		5.4.	Twisting
		5.5.	Tensile stress and strain

Preferred development environment for the implementation of the basic-level tasks::
- LEGO Mindstorms Software NXT-G

Required equipment:
- LEGO Mindstorms 2.0
- A computer with a minimum 1GHz processor with Windows XP or later