



## MASTER THESIS

### Development and implementation of dedicated active suspension control strategies regarding road profile PreScan functionality

#### Research domain

Active Safety

#### Topic

*Context:* As Flanders' DRIVE has the ambition to become a world class innovation partner for the automotive industry in the area of 'Active Safety', it has to build up specific competencies in the field of the integration of complex mechatronic systems. A research platform for an advanced active suspension system has already been achieved. This master thesis has been defined within the scope of the combination of active suspension with road surface PreScan functionality. As this combination should theoretically lead to an unprecedented level of driving comfort, it will also lead to a new range of control design challenges.

*Aim:* The objective is to develop dedicated active suspension control strategies regarding road unevenness, road roughness and handling with respect to PreScan functionality. Furthermore the combination of these control strategies must be achieved in such a way that the most suitable combination of control strategies for a certain road profile is identified and applied. To perform this investigation the research platform with active suspension will be available. All control strategies will be implemented in Matlab/Simulink and can be tested on the research platform and in an advanced simulation environment.

#### Profile

Master of (Applied) Engineering.

The master thesis student should have a strong interest in automotive mechatronics in combination with control design.

Knowledge of MATLAB and Simulink is considered an asset.

#### Term

Q3 2010 - Q1 2011

#### Supervisor

[michiell.wellens@flandersdrive.be](mailto:michiell.wellens@flandersdrive.be)