

Aerodynamics and Its Applications for Vehicles

BMEGEÁTMW09

Grade

The grade for the above written subject will be determined in the following way:

- mid-term exam (21th November): 50%
- vehicle modelling (25th November – 6th December): 40% (25% for aerodynamics, 15% for the design)
- presentation of the vehicle modelling measurements and visualization (12nd December): 10%

Passenger car modelling

Every group will receive two pieces of wood, with dimensions of 200mm x 80mm x 28mm, and 60mm x 70mm x 28mm. With the help of plasticine, a passenger car of 1:20 scale can be created. The relative position of the pieces of woods can be freely chosen, as far as the model resembles a car. The ground clearance (underbody gap) is 11mm, the distance of the axes is 140mm. The diameter of the wheels is 30mm, their width is 8mm. Wheels can be formed of the plasticine provided. In the larger piece of wood – under the passenger compartment - four boreholes were created, in order to attach the model to the scale (force measuring mechanism). Make sure not to cover these holes during modelling. The maximum length of the model is 250mm, its minimum height is 60mm, and its width is between 82 and 90mm.

The perpendicular cross section of the model has to be determined (together with the wheels), in order to determine drag and lift coefficients. There is a possibility to place attachments on the car model, like spoilers, ski boxes, etc.

Besides the force measurement, there will be a possibility for flow visualization around the car, during which the location and size of the separation bubbles, the size of the dead water region behind the car, effect of spoilers and other attachments, and soiling of the rear face of the car can be observed.

The measurements groups have to make a presentation of the project on the last class. The groups have to send their presentation material to the e-mail address: eszter.lukacs@gmail.com 2 days before the presentation at the latest.

21th October, 2013

Lukács Eszter