

# Courses in English

## Course Description

<b>Department</b>	03 Mechanical, Automotive and Aeronautical Engineering
<b>Course title</b>	<b>Vehicle Dynamics</b>
<b>Hours per week (SWS)</b>	4
<b>Number of ECTS credits</b>	5
<b>Course objective</b>	To give the student an appreciation of factors affecting vehicle longitudinal dynamics, handling and ride comfort. After taking this unit the student should be able to: - Describe and analyze the dynamics of a vehicle. - Calculate the power demand and energy consumption of a vehicle.- Understand the tasks of vehicle suspension and predict vehicle ride behavior and steady state handling performance. - Explain the physical principles of road vehicle aerodynamic design.
<b>Prerequisites</b>	Dynamics, Engineering Math, Engineering Mechanics
<b>Recommended reading</b>	
<b>Teaching methods</b>	
<b>Assessment methods</b>	
<b>Language of instruction</b>	English
<b>Name of lecturer</b>	Prof. Dr. P. Pfeffer
<b>Email</b>	<a href="mailto:peter.pfeffer@hm.edu">peter.pfeffer@hm.edu</a>
<b>Link</b>	
<b>Course content</b>	Longitudinal, lateral and vertical vehicle dynamics, control loop "driver-vehicle-environment", demands on vehicle handling, disturbance and sensitivity. Basic suspension systems. System frequencies - bounce, pitch and roll. Anti-pitch and anti-squat. Tire behavior. Front/rear suspensions - springs and dampers. Roll center. Steady state handling characteristics. Airflows. Drag & lift. Economy & performance. Aerodynamic design.
<b>Remarks</b>	