Department: 03 Mechanical, Automotive and Aeronautical Engineering

Course title: Design and Function of Automobiles, with lab

Hours per week (SWS): 4

Number of ECTS credits: 5

Course objective: Students
- understand the requirements of cars and their components
- learn how to describe, design, calculate and test vehicles and their main components
- comprehend the power and energy demand of vehicles
- learn about the characteristics of cars
- are able to understand and set up development schedules
- get to know various types of powertrain topologies and and comprehend how they affect the properties of the car
- learn about different chassis concepts and the way they have an effect on the driving behaviour

Prerequisites: Mechanics I/II/III, Machine Components I)

Recommended reading:
- Handbuch Kraftfahrzeugtechnik, Braess Hans-Hermann, Seiffert Ulrich, Vieweg Verlag
- Bosch Kraftfahrtechnisches Taschenbuch, Reif, K., Dietsche, K.-H., Springer Fachmedien, Wiesbaden
- Fahrwerkhandbuch: Grundlagen, Fahrdynamik, Komponenten, Systeme, Mechatronik, Perspektiven; Bernd Heißing und Metin Ersoy (Herausgeber); Vieweg Verlag

Teaching methods: Course lecture 4 SWS

Assessment methods: Coordinated exam together with partial module F3031 according to the legal framework of the degree program in which this course is offered. Approved aides for the examination will be published by means of the examination announcement

Language of instruction: English

Name of lecturer: Prof. Dr. Peter Pfeffer

Email: peter.pfeffer@hm.edu

Link

Course content:
- Main components of passenger cars
- Complete vehicle: requirements, development process, package
- Longitudinal dynamics: driving resistances, vertical forces, adhesion
- Powertrain: topologies (conventional, hybrid, electric), elements of the powertrain, demand for energy and power
- Chassis: tires, brakes, suspension, steering system
- Body