<table>
<thead>
<tr>
<th><strong>Course title</strong></th>
<th>Automotive Engineering F3032-CIE (together with partial module F3031 in module F3030)</th>
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</thead>
<tbody>
<tr>
<td><strong>engl. Modulbezeichnung</strong></td>
<td>Automotive Engineering I</td>
</tr>
<tr>
<td><strong>Name of lecturer</strong></td>
<td>Prof. Dr. Johannes Mintzlaff</td>
</tr>
<tr>
<td><strong>other lecturers</strong></td>
<td>Dipl.-Ing. Armin Rohnen</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>English</td>
</tr>
<tr>
<td><strong>Curriculum</strong></td>
<td>Bachelor of Automotive Engineering, Required Module, 4th Semester, Summer (and Winter?)</td>
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<tr>
<td><strong>Teaching Methods</strong></td>
<td>Course lecture, 4 SWS</td>
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<tr>
<td><strong>Time of involvement</strong></td>
<td>Presence: 45h – self study: 75h</td>
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<tr>
<td><strong>Number of ECTS credits</strong></td>
<td>4 ECTS</td>
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<tr>
<td><strong>Recommended prerequisites</strong></td>
<td>Mechanics, Machine Elements</td>
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</tbody>
</table>

### Course objective

- The students
  - understand the requirements for motor vehicles and their components
  - learn the ability to describe, sketch, calculate, design and test the main modules of vehicles
  - understand the need for power and energy of cars
  - learn the characteristics of motor vehicles
  - understand the development process
  - can create the requirements specifications
  - get to know various power train topologies and their effect on the behaviour of the complete vehicle
  - learn and understand different suspension concepts and their influence on the driving behaviour.
  - understand the suitability of different body types for the various car segments

### Course content

- Requirements for cars and their modules
- Development process, requirements specification, assessment index
- Package of the complete vehicle
- Driving resistances, demand for power and energy
- Major modules of motor vehicles
- power train of 2WD, 4WD, hybrid and electric vehicles
- Chassis components: wheel, brake, suspension, Steering system
- design and setup of the vehicle body

### Assessment methods

Exam 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.

### Literature recommendation

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

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