

## Course Description – summer 2022

<b>Title</b>	Automotive Drive Systems
<b>Faculty</b>	Mechanical Engineering
<b>Professor</b>	Prof. Dr. Georg Weidner
<b>ECTS</b>	5
<b>Level</b>	Bachelor
<b>Requirements</b>	-
<b>Add. Information</b>	<a href="https://www.hs-schmalkalden.de/hochschule/fakultaeten/fakultaet-maschinenbau/internationales/englische-kurse.html">https://www.hs-schmalkalden.de/hochschule/fakultaeten/fakultaet-maschinenbau/internationales/englische-kurse.html</a>
<b>Content</b>	<p>On the completion of this course the students should be able to give a quantitative contribution to the environmental discussion on motor vehicles. They will do calculations to the longitudinal dynamics and the demand for energy of cars. They can evaluate conventional and alternative drive systems concerning the demand for energy.</p> <ol style="list-style-type: none"> <li>1. Rolling resistance and adhesion to road surface</li> <li>2. Aerodynamic drag</li> <li>3. Empirical determination of air- and rolling resistance</li> <li>4. Climbing resistance</li> <li>5. Acceleration and deceleration</li> <li>6. Translatory and rotatory inertia</li> <li>7. Demand for energy and power at several test cycles</li> <li>8. Maps of combustion Engines</li> <li>9. Tractive force/speed diagram</li> <li>10. Calculation of fuel consumption</li> <li>11. Efficiency maps of DC- and AC-motors</li> <li>12. Batteries</li> <li>13. Adaption of electric motors to vehicles</li> <li>14. Calculation of driving range of electric cars</li> <li>15. Layouts of hybrid drive systems</li> <li>16. Calculation of consumption of hybrid drive Systems</li> <li>17. Transmission systems</li> </ol>