

## Outline of lecture on Atmospheric Re-entry

Date	Content
20.04.2020 8.30 – 10.30	<p>2 hours lecture:</p> <ul style="list-style-type: none"> <li>• Atmospheric re-entry vehicles, types and shapes</li> <li>• Hypersonic aerodynamics of reentry vehicles, determination of aerodynamic coefficients</li> <li>• Re-entry trajectory definition</li> </ul>
21.04.2020 8.30-12.30	<p>4 hours guided work:</p> <p>Definition and selection of project work (Return from Space Station, Aerobraking from GEO to LEO or Mars atmospheric entry) Selection of vehicle shape, determination of aerodynamic coefficients</p>
25.04.2020 8.30-12.30	<p>4 hours of guided work:</p> <p>Calculation of re-entry path parameters (Velocity, Altitude and Location) as a function of time with Matlab®</p>
11.05.2020 8.30 – 10.30	<p>2 hours lecture:</p> <ul style="list-style-type: none"> <li>• Aerodynamic heating</li> <li>• Heat protection methods</li> <li>• Heat protection materials</li> <li>• Re-entry trajectory with aerobraking</li> </ul>
16.05.2020 8.30-12.30	<p>4 hours guided work:</p> <p>Calculation of aerodynamic heating (heat flux, cumulated heat flux) with Matlab®</p>
19.05.2020 8.30-12.30	<p>4 hours guided work:</p> <p>Calculation of heat protection system (elements, mass) Integration of results into overall vehicle configuration and mass model</p>