

## Courses in English Course Description

<b>Department</b>	03 Mechanical, Automotive and Aeronautical Engineering
<b>Course title</b>	<b>Fundamentals of Computational Fluid-Dynamics</b>
<b>Hours per week (SWS)</b>	4
<b>Number of ECTS credits</b>	5
<b>Course objective</b>	#1 gain knowledge about simple flow models, incompressible without friction, potential flow theory and their mathematical classifications #2 understand the use of modern CFD simulation tools, finite difference methods, transformation of a physical flow model into its discrete matrix representation #3 implementation of self-created case files for modern CFD software usage and interpretation of the results #4 gain an overview of relevant technical turbulence models
<b>Prerequisites</b>	
<b>Recommended reading</b>	
<b>Teaching methods</b>	Course lecture and applied computer laboratory
<b>Assessment methods</b>	Final Exam This course is equivalent to M-SP4-2 "Grundlagen numerischer Strömungssimulation" in the Mechanical Engineering Bachelor of Science Degree program
<b>Language of instruction</b>	English
<b>Name of lecturer</b>	Prof. Dr. Björn Kniesner
<b>Email</b>	<a href="mailto:bjoern.kniesner@hm.edu">bjoern.kniesner@hm.edu</a>
<b>Link</b>	
<b>Course content</b>	#1 Mathematical analysis of physical flow processes #2 Classical flow analysis #3 Conservation of energy and mass in a discrete format #4 Numerical approximations of analytical models #5 Evaluation of different numerical solution methods #6 Realisation of CFD computer models #7 Numerical solutions of selected fluid dynamics phenomena #8 Final CFD Fluid Flow project
<b>Remarks</b>	