

## Courses in English Course Description

<b>Department</b>	05 Technical Systems, Processes and Communication
<b>Course title</b>	<b>Chemical Engineering</b>
<b>Course number</b>	
<b>Hours per week (SWS)</b>	3
<b>Number of ECTS credits</b>	4
<b>Course objective</b>	<p>Application of mathematical and scientific knowledge to fluid equilibrium, mass flow and mixtures;</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identification and solution of complex tasks in the field of fluid mechanics and hydraulics;</li> <li><input type="checkbox"/> Application of mathematical and scientific knowledge to problems in heat transfer in the subject area of conduction, convection and radiation;</li> <li><input type="checkbox"/> Thorough comprehension of the concepts and laws of thermodynamics;</li> <li><input type="checkbox"/> Practical application of knowledge in order to analyse and process even difficult problems in thermodynamics;</li> <li><input type="checkbox"/> Comprehension of possibilities and limitations of thermodynamics in the application;</li> <li><input type="checkbox"/> Compile independently other principles resulting from the field of thermo dynamics and apply the same.</li> </ul> <p>Consequently, the students are enabled to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> analyse fluid systems,</li> <li><input type="checkbox"/> compute heat transfer systems for the drier section of a paper machine,</li> <li><input type="checkbox"/> develop solutions for problems arising from the area of heat transmission and energy consumption,</li> <li><input type="checkbox"/> solve problems with regard to mass transfers and mass balances.</li> </ul>
<b>Prerequisites</b>	Knowledge of physics, mathematics, fundamentals of chemistry and fundamen tals of thermodynamics
<b>Recommended reading</b>	Michael J., Shapiro, Howard N., Fundamentals of Engineering Thermody namics, SI Version. Hoboken, John Wiley & Sons, 6th ed., 2010
<b>Teaching methods</b>	Lecture, seminar instruction, pro ject, work, excursion
<b>Assessment methods</b>	Written examination
<b>Language of instruction</b>	English
<b>Name of lecturer</b>	Dr. Daniel Eggerath
<b>Email</b>	<a href="mailto:daniel.eggerath@hm.edu">daniel.eggerath@hm.edu</a>
<b>Link</b>	
<b>Course content</b>	<p>Mass and Energy Balance, Thermodynamics <input type="checkbox"/> Fundamentals and nomenclature <input type="checkbox"/> Chemical equilibrium and behaviour in phase transformation of fluid prop erties and their equilibrium <input type="checkbox"/> Mixtures of ideal gases and psychrometric applications <input type="checkbox"/> Energy analysis and energy balances <input type="checkbox"/> Cyclic processes in gas turbines, steam power plants, refrigeration and heat pumps 16 <input type="checkbox"/> Steam systems, heat exchangers and vaporisers <input type="checkbox"/> Conduction and convection <input type="checkbox"/> Psychrometric diagram <input type="checkbox"/> Theoretical Basics of Drying</p>
<b>Remarks</b>	