

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