

Studiengang: Bachelor of Science Maschinenbau <i>Program:</i> Bachelor of Science in Mechanical Engineering					
1	Modul: Principles of Thermodynamics I <i>Module:</i>				Englisch <i>English</i>
		Semester <i>Semester</i>	Dauer <i>Duration</i>	Status <i>Status</i>	Turnus <i>Regular cycle</i>
		5. Semester	1 Semester	compulsary	annually
	Kreditpunkte <i>Credits</i>	Aufwand <i>Workload</i>	Kontaktzeit <i>Contact-hours</i>	Selbststudium <i>Student's efforts</i>	Gruppengröße <i>Team size</i>
	4 ECST	120 h	4 SWS = 60 h lectures	30 h pre-/post-preparation 30 h exercises	<25
2	Beschreibung <i>Description</i>				
	The first subject in engineering thermodynamics for the mechanical engineering student serves as a building block for thermodynamic oriented subjects to follow. Specific topics include definitions, first law, second law, heat and work transport, and the steady flow energy equation. Water, as both steam and incompressible liquid, and ideal gases and mixtures of ideal gases are the principal substances considered.				
3	Lernziele <i>Learning Outcomes</i>				
	Upon successful completion of this course, the student will:				
	<ul style="list-style-type: none"> • be able to find thermodynamic properties. • apply the ideal gas and incompressible liquid models to thermodynamic problems. • write an energy balance for closed and open system, and use it to evaluate process components, including determination of work and heat transports. • understand entropy and use it to evaluate processes 				
4	Schlüsselqualifikationen <i>Key qualifications</i>				
	Sozialkompetenz	Methodenkompetenz	Selbstkompetenz / Personenkompetenz	Interkulturelle Kompetenz	Medienkompetenz
		X	X		
5	Lehrveranstaltung/ -methoden <i>Course type and methods</i>				
	<ul style="list-style-type: none"> • Seminar-like lecture • Exercises, case-studies 				
6	Vorbedingungen / Vorkenntnisse <i>Prerequisites</i>				
	By topic:				
	<ul style="list-style-type: none"> • Partial derivatives • Differential and integral calculus 				
7	Arbeitsmittel / Literatur <i>Required material / Literature</i>				
	THERMODYNAMICS: AN ENGINEERING APPROACH, Yunus Çengel, Michael A Boles				

Detailinformationen							
8	Inhalte <i>Course topics</i> Definitions, First Law, second law, heat and work transport, steady flow energy equation. Water, as both steam and liquid, ideal gases and mixtures of ideal gases						
9	Prüfungsform <i>Assessment</i> Written examination (together with Principles of Thermodynamics II)						
10	Voraussetzung für die Vergabe von Kreditpunkten <i>Requirements for granting of credits</i> Successfully passing the written examination						
11	Weiterführende Veranstaltungen <i>Related courses</i> Principles of Thermodynamics II						
12	Zuordnung <i>Classification</i>						
	Mathematik & Naturwissenschaft	Ingenieurwissenschaften	Ingenieur-anwendungen	Entwicklung & Konstruktion	Werkstoffe	Wirtschaft, Management, Sprachen	Anderes
	X	X	X	X			
13	Modulbeauftragter / Lehrpersonen <i>Responsible person / Lecturers</i> Prof. Dr. Müller-Menzel / Prof. Dr. Müller-Menzel, Prof. Dr. Warnack, Prof. Dr. Pietsch						