

t.LT1 - Leichtbautechnik 1

Person responsible for the course: Hanfried Hesselbarth, hsbh

Credits: 4

Valid for: 2011/2012

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Learning objectives:

Systematic development of lightweight load-bearing structures of mechanical products, especially in the automotive domain: vehicles for road, for rail and for flight, furthermore load bearing structures for apparatus and vessels.

Understanding of lightweight elements and modes of construction as well as the corresponding background of statics, materials, production and economy.

Course content:

Lecture:

- External loads, derivation of design loads, load factors, safety.
- Bending, deflections of structures.
- Shear stresses and shearing deformation.
- Shear panels, skin-stringer panels, shear centre, sandwich beams.
- Torsion of thin walled bars with closed and with open sections.
- Composite materials and structures.
- Columns under combined compression and bending.
- Buckling of curved and of flat plates under compression, shear and bending.

Exercises:

The exercises are corresponding to the lecture's subjects

Previous knowledge:

basics in statics and strength of materials

Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	14*4
Tutorial/Practicum	
Group teaching	
Block instruction	
Seminar	

Assessment:

According to the table or as specified in writing by the lecture at the beginning of the semester!

Number	Type	Weighting
1	End of term exam	50%
1	Exam during the semester	40%
1	Further assessments	10%

Language of instruction:

German

Instruction material:

Handouts, Exercises,

Leichtbau - Konstruktion, Klein, Bernd, Vieweg 8., überarb. u. erw. Aufl. 2009, ISBN: 978-3-8348-0701-4

Formulas for Stress and Strain. Roark, Raymond J. McGraw-Hill 7 2001

Comments:

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