

## t.CWAV2 - Chemie und Werkstoffe für Aviatik 2

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**Person responsible for the course:** Olaf Meincke, menk

**Credits:** 2

**Valid for:** 2010/2011

**Last saved:** 22.02.2011 14:58

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### Learning objectives:

Competence of understanding and solving technological and environmental relevant problems by applying tools and models of chemistry and materials science

Knowledge of the most important materials properties for the use in aircraft construction

Knowledge of safety aspects and of handling of dangerous and flammable goods

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### Course content:

Introduction to materials - Materials testing, nondestructive testing, failure analysis

Metal structures - Dense packings, sliding planes, microstructure, crystal defects, dislocations, mixed crystals, texture

Alloys - phase diagrams - Liquidus and solidus curves, construction of phase diagrams, full miscibility, partial miscibility, eutectic, miscibility gap, aluminium alloys

Iron and steel - Blast furnace process, steel production, processing, nomenclature systems, iron/carbon diagram, alloying elements, thermal treatment

Nonferrous metals - Aluminium titanium, magnesium, superalloys, production, structure, properties, application for aircraft construction

Polymers - Types of polymerization reactions, structures, properties, processing, adhesives, coatings, foams, filled polymers

Composites - Use in aircrafts, fibre types, textiles, production, processing, orientation, mechanical properties, sandwich (GLARE), CMC's

Fire and explosions - Kinetics, activation energy, chain reactions, catalysts, combustion process, explosions, fire classes, extinguishment, toxic emissions

Dangerous chemicals, hazardous substances - Toxicity, labelling, storage, shipping and transport, IATA rules, handling

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### Previous knowledge:

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**Teaching method:**

Type of lesson:	Number of lessons per week:
Lecture	14x2L
Tutorial/Practicum	
Group teaching	
Block instruction	
Seminar	

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**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	2
	Exam during the semester	
	Further assessments	

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**Language of instruction:**

Deutsch

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**Instruction material:**

Skript "Chemie und Werkstoffe", Vorlesungsfolien, Übungen

978-3-13-484309-5 Chemie Mortimer, Müller Thieme 9 2006

978-3-8343-3074-4 Technologie des Flugzeugs K. Engmann Vogel 4 2008

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**Comments:**

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