

## t.HFG - Hochfrequenz Grundlagen

**Person responsible for the course:** Werner Baumberger, bauw

**Credits:** 4

**Valid for:** 2011/2012

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### Learning objectives:

The participants know the relevant terms and methods of RF technology and are able to apply its most important measurement techniques as well as a modern microwave CAE tool (Microwave Office).

They get a qualified overview of the prevalent passive and active RF components such as directional couplers, filters and amplifiers, and know examples of their circuit technique.

They know the basics of electromagnetic wave propagation, antenna technique and EMC.

### Course content:

Introduction:

- parasitic elements of passive components
- transmission line theory in time and frequency domain (repetition)

Theory:

- Smith-chart
- S-parameters

Practical RF-technology:

- waveguides (coaxial cable, microstrip, hollow waveguide)
- measurement techniques (spectrum and network analyzers)
- passive components (attenuators, directional couplers, circulators, resonators, filters)
- semiconductors (materials, MESFET, HEMT, HBT, Schottky- and pin-diodes)
- active components (amplifiers, mixers, control elements)
- practical wave propagation and antenna technique
- basics of EMC

### Previous knowledge:

AC circuit theory  
electronics basics

### Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	14*2
Tutorial/Practicum	7*4
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	60%
3	Exam during the semester	30%
1	Lab report	10%

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**Language of instruction:**

German

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**Instruction material:**

Lecture notes, exercises and sample solutions are available in electronic form.

<http://www.hochfrequenzelektronik.ch/hfg/>

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**Comments:**

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