Zurich University of Applied Sciences

School of Engineering

# t.SISY1 - Signale und Systeme 1

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| **Person responsible for the course:** | Marina de Queiroz Tavares, dqtm |
| **Credits:** | 4 |
| **Valid for:** | 2010/2011 |
| **Last saved:** | 08.09.2010 14:24 |

**Learning objectives:**

Systems:
The students are able to describe mathematically simple technical systems and they are able to perform a detailed analysis of the time and frequency behaviour. They are able to interpret the results
Signals:
The students are able to characterize signals. They know and they are able to apply the main descriptions and analysis methods.

**Course content:**

Lecture:
- overview (Classification, characteristics of signals and systems)
- representation and analysis of periodic signals (Fourier series and spectrum)
- Fourier-Transformation
- Representation of dynamic systems with differential equations (mathematical modeling)
- frequency response of linear dynamic systems (Bode diagrams)
- time behaviour of linear dynamic systems (step response, impulse response, connection to frequency behaviour, uncertainty principle (rise time*bandwidth))
- sampling and reconstruction of signals (samplings, sampling theorem, aliasing)
- representation of discrete time signals (discrete fourier transformation, spectrum)

Laboratory:
- Computer exercises in groups corresponding to the topics treated in the lecture
- Extension and consolidation of the theory
- Tools: Matlab/Simulink

**Previous knowledge:**

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**Teaching method:**

| Type of lesson: | Number of lessons per week: |
|---|---|
| Lecture | |
| 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 | 60% |
| 1 | Exam during the semester | 20% |
| | Further assessments | 20% (e.g. Lab Reports) |

**Language of instruction:**

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**Instruction material:**

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**Comments:**

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