# **Course Signal Processing**

Course

Meets requirements of following modules(MID) Course Organization Assessment Course components <u>Lecture/Exercise</u> <u>Lab</u>

Responsible: Prof. Dr. Rainer Bartz

## Course

### Meets requirements of following modules(MID)

- in active programs
  - Ba TIN2012 SIG
  - Ba TIN2010 DSS

### **Course Organization**

| Version    |            | Course identifiers     |                   |  |
|------------|------------|------------------------|-------------------|--|
| created    | 2013-06-20 | Long name              | Signal Processing |  |
| VID        | 1          | CID                    | F07_SIG           |  |
| valid from | WS 2012/13 | CEID (exam identifier) |                   |  |
| valid to   |            |                        |                   |  |

| Contact hours per week (SWS) |   |   | Total contact hours  |           | Max. capacity      |    |
|------------------------------|---|---|----------------------|-----------|--------------------|----|
| Lecture                      | 2 |   | Lecture              | 30        | Exercise (unsplit) |    |
| Exercise (unsplit)           |   |   | Exercise (unsplit)   |           | Exercise (split)   | 40 |
| Exercise (split)             | 1 |   | Exercise (split)     | 15        | Lab                | 10 |
| Lab                          | 1 |   | Lab                  | 15        | Project            |    |
| Project                      |   |   | Project              |           | Seminar            |    |
| Seminar                      |   |   | Seminar              |           |                    |    |
| Tutorial(voluntary)          |   | 1 | Tutorial (voluntary) | $\square$ |                    |    |

### Total effort (hours): 150

#### Instruction language

- German, 70%
- English, 30%

### **Study Level**

• undergraduate

### Prerequisites

- basic programming skills
- sequences and series
- trigonometric, exponential and logarithmic functions
- polynomial division
- limits, infinite series, partial fraction expansion

• differential and integral calculus

### Textbooks, Recommended Reading

• Carlson, G. E.: Signal and Linear System Analysis, John Wiley & Sons, Inc.

### Instructors

• Prof. Dr. Rainer Bartz

### Supporting Scientific Staff

• tba

### Transcipt Entry

Signal Processing

### Assessment

**Type** wE written exam

| Total effort [hours] |    |  |  |  |
|----------------------|----|--|--|--|
| wE                   | 10 |  |  |  |

Frequency: 2-3/year

# Course components

Lecture/Exercise

### Objectives

### Contents

• basic concepts (sil raSy ,LiL wr rssbas (sicuaed ve 7

#### **Operational Competences**

• students can implement a discrete-time system based on given requirements

### **Additional Component Assessment**

|     | Туре                                |
|-----|-------------------------------------|
| fPS | supervised/assisted problem solving |

 Contribution to course grade

 fPS
 not rated

#### Frequency: 1/year

Lab

### Objectives

#### Contents

- · sampling input and output signals of a CT system
- basic algorithms of signal processing
- software implementation of a DT system from a requirements specification

#### Acquired Skills

- students can use state of the art tools for system modelling, simulation, and implementation
- they understand the relationship between CT and DT systems and can explain the most important effects

#### **Operational Competences**

- · students are able to solve problems in small teams
- they can analyze measurement results and extract knowledge about the underlying system
- they are able to model and simulate a real-world system
- · they can detect a wrong sample rate and adjust it
- they are able to implement basic algorithms of digital signal processing

### **Additional Component Assessment**

| Туре |                     |  |  |  |
|------|---------------------|--|--|--|
| fSC  | 2-3 lab experiments |  |  |  |

#### Contribution to course grade

fSC prerequisite for course exam

#### Frequency: 1/year

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