

<b>Course Title:</b>	<b>Digital Signal Processing</b>
<b>ECTS:</b>	5 CP
<b>Type:</b>	Laboratory exercises, project assignment
<b>Responsible:</b>	Prof. Dr. Carsten Roppel

### **Learning Outcomes:**

Understand basic principles of digital signal processing (DSP). Theoretical concepts are applied in the lab with DSP development boards. Prepare a report and presentation on a DSP related topic.

### **Content:**

Applications of digital signal processing

Sampling und quantization

Hardware of the DSP starter kit (DSK) and software development tools

Amplitude response of the DSK

Generation of a sine wave using the sine function or a table

Developing an FIR filter

Developing an FIR filter with integer arithmetic or Q.15 arithmetic

Implementation of other filters using the Matlab filter design tool

Implementation of a recursive sine wave oscillator

### **Prerequisites**

Basic knowledge in signals and systems and programming in C recommended.

### **Examination**

Lab report, project report, project presentation and oral examination (in English).

### **Recommended Reading:**

Chassaing, R.: DSP Applications using C and the TMS320C6x DSK. Wiley, 2002.

Grüningen, D. Ch.: Digitale Signalverarbeitung. Hanser, 2004.

Oppenheim, A. V., Schaffer, R. W. , Buck, J. R.: Discrete-Time Signal Processing. Prentice Hall, 1999.

Proakis, J. G., Manolakis, D. G.: Digital Signal Processing. Pearson Prentice Hall, 4. Aufl., 2007.

Roppel, C.: Grundlagen der digitalen Kommunikationstechnik. Hanser, 2006.