

Course Description – Winter Semester

Title	Digital Signal Processing for Engineering Applications
Faculty	Electrical Engineering
Professor	Prof. Dr. Carsten Roppel
ECTS	5
Level	Master
Requirements	Basic knowledge in electrical engineering, signals and systems and MATLAB is recommended.
Add. Information	Lecture and laboratory experiments
Content	<ol style="list-style-type: none"> 1 Introduction 2 Sampling und Quantization <ul style="list-style-type: none"> Sampling Theorem Sampling of Bandpass Signals Quantization ADC Parameters and Types 3 Discrete-Time Signals and Systems <ul style="list-style-type: none"> Impulse Response and Convolution Fourier-Transform of Discrete-Time Signals Discrete Fourier-Transform (DFT) Random Signals Bearing Vibration Analysis 4 Digital Filters <ul style="list-style-type: none"> General Structure of Digital Filters Finite Impulse Response (FIR) Filters Infinite Impulse Response (IIR) Filters Improving ADC Resolution by Oversampling and Filtering 5 Representation of Numbers and Quantization of Filter Coefficients