

Module MA-INF 2203	Selected Topics in Signal Processing				
Workload 270 h	Credit points 9 CP	Duration 1 semester	Frequency every year		
Module coordinator	apl. Prof. Dr. Frank Kurth				
Lecturer(s)	apl. Prof. Dr. Frank Kurth, Prof. Dr. Michael Clausen				
Classification	Programme M. Sc. Computer Science		Mode Optional	Semester 2.	
Technical skills	Learning advanced as well as state of the art topics and techniques in digital signal processing. Study examples from the field of digital audio signal processing with a focus on music audio. Develop skills for analysing audio signals and designing audio features for selected application scenarios. Mathematical modelling of signal processing problems in practical applications. Design and implementation of corresponding algorithms and data structures solving those problems. Efficiency issues.				
Soft skills	Capability to analyze. Time management. Strength of purpose. Discussing own solutions and solutions of others.				
Contents	Advanced techniques for filter design, design and extraction of features describing multimedia signals, efficient DSP algorithms, general concepts for content-based analysis of multimedia signals. Selected signal processing applications, for example content-based music analysis, signal compression, denoising, source separation.				
Prerequisites	none				
Format	Teaching format	Group size	h/week	Workload[h]	CP
	Lecture	60	4	60 T / 105 S	5.5
	Exercises	30	2	30 T / 75 S	3.5
	T = face-to-face teaching; S = independent study				
Exam achievements	Written exam (graded)				
Study achievements	Successful exercise participation (not graded)				
Forms of media					
Literature	<ul style="list-style-type: none">• Lecture script and selected research publications• Hayes: Statistical Digital Signal Processing and Modelling, John Wiley, 1996• Proakis, Manolakis: Digital Signal Processing, Prentice Hall, 1996• Klapuri, Davy: Signal Processing, Methods for Music Transcription, Springer, 2006				