

Table I: The General Course Plan for ASC

Module Nr.	Type of Module	ECTS	Module	ECTS in Semester			
				First	Second	Third	Fourth
1	Mandatory modules (60ECTS)	5	Mathematical Optimization for Communications and Signal Processing	5			
2		5	Information Theory and Coding	5			
3		5	Statistical Signal Processing	5			
4		5	Game Theory with Applications to Information Engineering	5			
5		5	Machine Learning in Signal Processing	5			
6		5	Selected Topics in ASC		5		
7		5	Kick-off Seminar (Winter School, Summer School)	2.5	2.5		
8		15	Research Project (Major)			15	
9		10	Research Project (Minor)			10	
10		Mandatory-Elective Modules (20ECTS)	15	From “ Technical Mandatory-Elective Courses ” (Table 2)		15	
11	5		From “ Technical Lab Courses ” (Table II)	2.5	2.5		
12	Elective Modules (10ECTS)	5	From “ Nontechnical Elective Courses ” (Table II)		5		
13		5	From “ Technical Elective Courses ” (Table II)			5	
14	Master Thesis	30	Master Thesis				30
Sum ECTS in Semester				30	30	30	30
Sum ECTS							120

Table II

Module Class	Course Name	ECTS in Winter Semester	ECTS in Summer Semester
Technical Mandatory- Elective Courses	Communications Systems Design	5	
	Convex Optimization in Communications and Signal Processing	5	
	Mobile Communications		5
	Image and Video Compression		5
	MIMO Communication Systems		5
	Speech and Audio Signal Processing		5
	Advanced Communication Networks		5
	Embedded Systems	5	
	Quality-of-Service in Communications		5
	Channel Coding on Graphs		5
	Mathematical Methods for Machine Learning and Signal Processing		5
Technical Lab Courses	Statistical Signal Processing	2.5	
	Machine Learning in Signal Processing	2.5	2.5
	Image and Video Signal Processing on Embedded Systems	2.5	
	Multimedia Communications		2.5
	Mobile Communications		2.5
	Audio Processing	2.5	
Technical Elective Courses	Image, Video, and Multidimensional Signal Processing	5	
	Molecular Communications	5	
	Multuser Information and Communications Theory	5	
	Channel Coding		5
	Pattern Recognition	5	
	Pattern Analysis		5
	Advanced Audio Processing	5	
	Music Processing	5	
	Linear and non-linear Fibre Optics		5
	Advanced Optical Communication Systems	5	
	Concurrent Systems	5	
	Reconfigurable Computing	5	
	Theory of Communication in Parallel Systems	5	
	Advanced Networking	5	
	Equalization and Adaptive Systems for Digital Communications	2.5	
	Transmission and Detection for Advanced Mobile Communications		2.5
	Signal Analysis	2.5	
	Transforms in Signal Processing		2.5
	Machine Learning in Communications	5	
Human-Machine-Interfaces		2.5	
Approximate Computing		5	
Random Matrices in Communications and Signal Processing	5		
Nontechnical Elective Courses	Entrepreneurship	2.5	
	Innovation Management		5
	Language courses (for international students)		