Table I – Module Plan / General Course Plan – for ASC Batch 2021/22

Type of Module	ECTS	Module *(Course Name or Module Class)*	ECTS in Semester			
			1st	2nd	3rd	4th
Mandatory Modules (50 ECTS)	5	Mathematical Optimization for Communications and Signal Processing	5			
	5	Information Theory and Coding	5			
	5	Statistical Signal Processing	5			
	5	Machine Learning in Signal Processing	5			
	5	Deep Learning		5		
	2.5	Game Theory with Applications to Information Engineering		2.5		
	2.5	Selected Topics in ASC		2.5		
	5	Kick-off Seminar (Winter School, Summer School)	2.5	2.5		
	15	Research Project (Major)			15	
Mandatory-Elective Modules (20 ECTS)	15	From "**Technical Mandatory-Elective Courses**" (Table II)		15		
	5	From "**Technical Lab Courses**" (Table II)	2.5		2.5	
Elective Modules (20 ECTS)	5	From "**Nontechnical Elective Courses**" (Table II)	5			
	15	From "**Technical Elective Courses**" (Table II)			15	
Master's Thesis	30					30
TOTAL SUM	**120**		**30**	**27,5**	**32,5**	**30**

Table II

Module Class	Course Name	ECTS in Winter Semester	ECTS in Summer Semester
Technical Mandatory-Elective Courses (binding list, NOT extendible)	Communications Systems Design	5	
	Convex Optimization in Communications and Signal Processing	5	
	Embedded Systems	5	
	Introduction to Modern Cryptography	5	
	Mobile Communications		5
	Image and Video Compression		5
	MIMO Communication Systems		5
	Speech and Audio Signal Processing		5
	Advanced Communication Networks		5
	Quality-of-Service in Communications		5
	Channel Coding on Graphs		5
	Human Computer Interaction		5
	Radar, RFID and Wireless Sensor Systems		5
	Research Project (Minor) (*)		10
Technical Lab Courses (extendible list)	Statistical Signal Processing	2.5	
	Audio Processing	2.5	
	Image and Video Signal Processing on Embedded Systems	2.5	
	Machine Learning in Signal Processing	2.5	2.5
	Image and Video Compression		2.5
	Mobile Communications		2.5

(*) not for students of Batch WS 19/20 (**) currently not offered

Module Class	Course Name	ECTS in Winter Semester	ECTS in Summer Semester
Nontechnical Elective Courses (extendible list)	Entrepreneurship	2.5	
	Energy Markets	5	
	Scientific Writing in Engineering and Science	2.5	2.5
	Innovation Management		5
	Language courses (for international students)		
Technical Elective Courses (extendible list)	Advanced Optical Communication Systems	5	
	Pattern Recognition	5	
	Image, Video, and Multidimensional Signal Processing	5	
	Molecular Communications	5	
	Multiuser Information and Communications Theory	5	
	Advanced Audio Processing	5	
	Music Processing	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	
	Signal Analysis	2.5	
	Machine Learning in Communications	5	
	Random Matrices in Communications and Signal Processing	5	
	Machine Learning for Time Series	5	
	Virtual Vision	2.5	
	Linear and non-linear Fibre Optics		5
	Transmission and Detection for Advanced Mobile Communications		2.5
	Transforms in Signal Processing		2.5
	Channel Coding		5
	Pattern Analysis		5
	Human-Machine-Interfaces		2.5
	Approximate Computing		5
	CryptoCurrencies		5
	Reinforcement Learning		5
	Audio Processing for the Internet of Things		2.5
	Selected Topics of Deep Learning for Audio, Speech, and Music Processing		2.5
	Compressive Sensing		5

(*) not for students of Batch WS 19/20 (**) currently not offered