

Table I – Module Plan / General Course Plan – for ASC Batch 2020/21

Type of Module	ECTS	Module (Course Name or Module Class)	ECTS in Semester			
			1 st	2 nd	3 rd	4 th
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	Game Theory with Applications to Information Engineering	5			
	5	Machine Learning in Signal Processing	5			
	5	Selected Topics in ASC		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	30	30	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	
	Introduction to Deep Learning	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	
	Image and Video Signal Processing on Embedded Systems	2.5	
	Communications Systems Design	2.5	
	Audio Processing	2.5	2.5
	Machine Learning in Signal Processing		2.5
	Mobile Communications		2.5
	Image and Video Compression		2.5
Nontechnical Elective Courses (extendible list)	Energy Markets	5	
	Innovation Management		5
	Innovation & Entrepreneurship		5
	Scientific Writing in Engineering and Science	2.5	2.5
	Language courses (for international students)		
Technical Elective Courses (extendible list)	Image, Video, and Multidimensional Signal Processing	5	
	Molecular Communications	5	
	Multuser Information and Communications Theory	5	
	Advanced Audio Processing	5	
	Music Processing	5	
	Pattern Recognition	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	
	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	
	AI-enabled Wireless Networks (Alnet)	2.5	
	Cognitive Neuroscience for AI Developers	5	
	Machine Learning for Time Series	5	
	Pattern Analysis		5
	Channel Coding		5
	Linear and non-linear Fibre Optics		5
	Transmission and Detection for Advanced Mobile Communications		2.5
	Transforms in Signal Processing		2.5
	Approximate Computing		5
	Reinforcement Learning		5
	Audio Processing for the Internet of Things		2.5
	Selected Topics in Deep Learning for Audio, Speech, and Music Processing		2.5
	CryptoCurrencies		5
Self-Organized Networks		5	
4G/5G Mobile Communication Systems		2.5	
Advanced Deep Learning		5	

(*) currently not offered