Table I – Module Plan / General Course Plan – for ASC Batch 2024/25

Type of Module	ECTS	Module *(Course Name or Module Class)*	Campo Module number	ECTS in Semester			
				1st	2nd	3rd	4th
Mandatory Modules (47.5 ECTS)	5	Mathematical Optimization for Communications and Signal Processing	48400	5			
	5	Information Theory and Coding	48410	5			
	5	Statistical Signal Processing	48420	5			
	5	Machine Learning in Signal Processing	48440	5			
	5	Deep Learning	48455		5		
	2.5	Selected Topics in ASC	48451		2.5		
	5	Kick-off Seminar, Winter School & Summer School	48460	2.5	2.5		
	15	Research Project (Major)	48470			15	
Mandatory-Elective Modules (20 ECTS)	15	From "**Technical Mandatory-Elective Courses**" (Table II)	*1700*		15		
	5	From "**Technical Lab Courses**" (Table II)	*1750*	2.5		2.5	
Elective Modules (22.5 ECTS)	7.5	From "**Nontechnical Elective Courses**" (Table II)	*1500*	5	2.5		
	15	From "**Technical Elective Courses**" (Table II)	*1800*			15	
Master's Thesis (30 ECTS)	30		1999				30
TOTAL SUM	**120**			**30**	**27,5**	**32,5**	**30**

Table II

Module Class	Course Name	Campo Module Number	ECTS In Winter Semester	ECTS in Summer Semester
Technical Mandatory-Elective Courses (binding list, NOT extendible)	Communications Systems Design	700506	5	
	Convex Optimization in Communications and Signal Processing	96850	5	
	Embedded Systems	44410	5	
	Introduction to Modern Cryptography	93015	5	
	Introduction to Deep Learning	43405	5	
	Advanced Topics in Deep Learning	42800		5
	Mobile Communications	43141		5
	Image and Video Compression	96310		5
	MIMO Communication Systems	96300		5
	Advanced Communication Networks	151664		5
	Quality-of-Service in Communications	44362		5
	Channel Coding on Graphs	412023		5
	Human Computer Interaction	645618		5
	Radar, RFID and Wireless Sensor Systems	96316		5
	Pattern Recognition	44130	5	
	Research Project (Minor)	48480		10
Technical Lab Courses (extendible list: any Lab Course at the Technical Faculty)	Image and Video Signal Processing on Embedded Systems	97525	2.5	
	Communications Systems Design	92355	2.5	
	Audio Processing	894349	2.5	2.5
	Machine Learning in Signal Processing	878210		2.5
	Lab Course Machine Learning and Systems	47574	2.5	
	Mobile Communications	97640		2.5
	Image and Video Compression	97651		2.5
Nontechnical Elective Courses (extendible list: any course FAU-wide)	Energy Markets	52990	5	
	Technology and Innovation Management - KO	53450		5
	Technological Impact Entrepreneurship for Sustainable Development	96113		5
	Scientific writing courses			
	Language courses (for international students)			
Technical Elective Courses (extendible list: any course at the Technical Faculty)	Image, Video, and Multidimensional Signal Processing	96312	5	
	Molecular Communications	454183	5	
	Multiuser Information and Communications Theory	687141	5	
	Pattern Recognition	44130	5	
	Advanced Optical Communication Systems	621649	5	
	Reconfigurable Computing	741941	5	
	Advanced Networking LEx	869547	5	
	Equalization and Adaptive Systems for Digital Communications	43400	2.5	
	Signal Analysis	250058	2.5	
	Machine Learning in Communications	668129	5	
	Random Matrices in Communications and Signal Processing	451971	5	
	Machine Learning for Time Series	428256	5	
	AI-enabled Wireless Networks (AInet)	93172	2.5	
	Cognitive Neuroscience for AI Developers	44445	5	
	Pattern Analysis	44120		5
	Channel Coding	96270		5
	Linear and non-linear Fibre Optics	267499		5
	Transmission and Detection for Advanced Mobile Communications	43420		2.5
	Transforms in Signal Processing	498723		2.5
	Approximate Computing	965820		5
	Reinforcement Learning	93185		5
	Audio Processing for the Internet of Things	44522		2.5
	CryptoCurrencies	566245		5
	Next Generation Mobile Communication Systems: 5G-Advanced and 6G	60651		2.5
	Seminar on Selected Topics in Machine Learning	92374		