Study Plan

Advanced Signal Processing & Communications Engineering (ASC)

Study Plan for the Elite Master's Degree Programme Advanced Signal Processing & Communications Engineering (ASC)

No later than two weeks after the start of lectures each semester, students must submit a study plan for the current semester, approved by the mentor, to the ASC office.

The study plan documents the course of studies planned for the current semester as well as, if applicable, the study progress and success of previous semesters.

'Research Projects' and Master thesis have to be documented in the curriculum in such a way that an assessment of the thematic diversity according to § 43(3) can be made on the basis of the summary of the topic and the indication of the supervisors.

Please note that this concept is a binding version and later alterations require the consent of the Admission Committee.

Current Semester	Semester Start of Studies	# Sem	Matriculation Number
Last Name	**First Name**		**Graduated from**

Signatures

Date: _____ Date: _____

Signature: _____ Signature: _____

Full Name: _____ Full Name: _____

Function: STUDENT Function: MENTOR

Study Plan

Course Plan

Type of Module	Standard Semester Sem-x (WS/SS)	Module Name	ECTS	Planned Semester Sem-x (WS/SS)	Course Passed MM-YYYY
Mandatory Modules (50 ECTS)	Sem-1 (WS)	Mathematical Optimization for Communications and Signal Processing	5		
	Sem-1 (WS)	Information Theory and Coding	5		
	Sem-1 (WS)	Statistical Signal Processing	5		
	Sem-1 (WS)	Machine Learning in Signal Processing	5		
	Sem-2 (SS)	Deep Learning	5		
	Sem-2 (SS)	Game Theory with Applications to Information Engineering	2.5		
	Sem-2 (SS)	Selected Topics in ASC	2.5		
	Sem-1 (WS) Sem-2 (SS)	Kick-off Seminar, Winter School & Summer School	5		
	Sem-3 (SS)	Research Project (Major)	15		
Technical Mandatory-Elective Courses (15 ECTS)					
Technical Lab Courses (5 ECTS)					
Nontechnical Elective Courses (5 ECTS)					
Technical Elective Courses (15 ECTS)					
Master's Thesis	Sem-4 (SS)		30		

Research Project(s)

Module	Supervisor and Topic *
Research Project (Minor) - optional (ECTS towards Technical Mandatory-Elective Courses)	
Research Project (Major) (ECTS towards Mandatory Modules)	

* Use this table to state your plans at the beginning of the 3rd semester at the latest. Fill in the additional "Project Form" with the final title and other details to state your final plans BEFORE you actually start your project work

Study Plan Comments

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

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	
	Introduction to Deep Learning	5	
	Advanced Topics in 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	
	Multiuser 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