



Master's Programme in

Information and Network Engineering

Do you know your wireless communications, networking, and data analysis? We live in an increasingly on-line world, where not only people but also an increasing number of different machines and sensors are connected. Digitalization of society and industry is discussed daily, including concepts such as Internet of Things, smart homes, the Smart Grid and autonomous vehicles.

To maintain and develop the high-tech industry around the world, engineers are needed who can both understand and develop communication solutions as well as having the methods to analyse and process the huge amounts of information that flow in various networks. To an increasing degree, this need will also be felt outside the traditional information and communications technology sector. Examples include the new sector of companies based on cloud services as well as more traditional man-

ufacturing industry and the motor vehicle industry, to mention a few.

This programme will prepare you for a future professional role by providing you with a broad basis and the opportunity for in-depth studies in the following areas:

- Communications engineering
- Information engineering
- · Multimedia processing and analysis
- Networked systems

In addition to the technical aspects of the coursework, there are also many non-technical classes offered, such as project management and leadership, and technical English.

DEGREE PROJECT

The degree project amounts to one semester of full-time work and is normally undertaken during the last semester. The project is carried out in the area defined by and relevant to the courses taken during the programme. The project may be undertaken in either an industry setting, at a KTH department, or in another technical university or research institute anywhere in the world.

Examples of degree project made by former students:

- Automated cyber security compliance assessment
- Data analytics optimization for mobile networks, based on divisible load theory
- Performance of In-Band Full-Duplex for 5G Wireless Networks
- Object ranking for mobile 3D visual search
- Solving Sudoku by sparse signal processing

CAREER PROSPECTS

The Information and Network Engineering master programme has been designed to provide a broad basis in the strongly connected fields of networking, communication, multimedia processing and computing, with the opportunity of gaining expertise of one of these areas. The program prepares for a future professional role in research and development. There are many companies in the Stockholm area working with traditional telecommunication technologies, as well as in the emerging areas of internet of things, cloud computing or industry digitization. A majority of graduates find work in research and development at companies in the field of communications and digitalization. Elective courses with strong theoretic content in the fields of networking and information engineering benefit students with interest in future research career, and give a good basis for Ph.D. studies in Sweden or abroad.

Information and Network Engineering will continue to be pivotal in how our societies operate, and KTH will play an important role by providing the talent and creativity for the future.

Examples of companies were former students work: Google, Skype, Ericsson, Huwei technologies, Telia company, Nokia, ÅF, Cisco, ABB, Avida finans and Scania

FACULTY AND RESEARCH

The programme in Information and Network Engineering is given by the School of Electrical Engineering and Computer Science at KTH. The area of Telecommunication Engineering at KTH is ranked 20th in the world by Academic Ranking of World Universities (ARWU), the Shanghai ranking. The field of Electrical and Electronics at KTH is currently ranked 26th in the world by QS (17th in 2016, 16th in 2015). Faculty from the departments in Information Science and Engineering, and Network and Systems Engineering, is teaching courses within this programme, and all teachers are also active researchers in the area.

COURSES

The programme has mandatory and recommended courses for all students. Besides those courses all students choose to follow a specific track with a set of mandatory and conditionally elective courses.

The tracks are: Communications engineering, Information engineering, Multimedia processing and analysis, and Networked systems.

In addition to that the programme has around 30 credits for courses of your own choice.

CONTACT

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READ MORE AND GET IN CONTACT WITH THE STUDENT AMBASSADORS

www.kth.se/studies

MANDATORY: ALL TRACKS						_	_	
EP2120	MANDATO	DPV. ALL TRACKS	YEAR	CREDITS	1	2	3	4
EQ1222 The Sustainable Engineer 1-2 3.0 x x x x x x x x x	MANDAIC	OKI. ALL TRACKS						
EQ2222	EP2120		1	7.5	X			
EQ2310 Digital Communications 1 9.0 x x			1	7.5	X			
AK2036 Theory and Methodology of Science with Applications 1 7.5			1-2	3.0	X	X	X	X
Science with Applications 1			1	9.0		X	X	
RECOMMENDED COURSES	AK2036							
LS1465		of Science with Applications	1	7.5				X
Second	RECOMMI	ENDED COURSES						
LS2439	LS1465							
Presenting a Degree Project			1	7.5			X	
AK1213	LS2439	English for Writing and						
Industry in Historical Perspective 1			1	7.5			X	
LS1502 Swedish A1 for Engineers 1 7.5	AK1213							
LS2429 Technical Communication in Eng. 1 7.5 x EH2720 Management of Projects 1 7.5 x EH2720 Management of Projects 1 7.5 x EH2720 Industrial Management 1 6.0 x DD2423 Image Analysis and Computer Vision 1 7.5 x EP2500 Networked Systems Security 1 7.5 x EQ2330 Digital Signal Processing 1 7.5 x EQ2330 Image and Video Processing 1 7.5 x ID1018 Programming 1 7.5 x ID1212 Network Programming 1 7.5 x EP2200 Queuing Theory and Teletraffic Systems 1 7.5 x EP2520 Building Networked Systems Security 1 7.5 x EQ2321 Speech and Audio Processing 1 7.5 x EQ2401 Adaptive Signal Processing 1 7.5 x EQ2411 Advanced Digital Communications 1 7.5 x EQ2412 Advanced Digital Communications 1 7.5 x EQ2413 Cyber-Physical Networking 1 7.5 x EQ2461 Seminars in Information and Network Engineering 1 7.5 x EQ2470 Applied Antenna Theory 1 7.5 x EH2770 IT Management with Enterprise Architecture 1 7.5 x EQ2341 Pattern Recognition and Machine Learning 1 7.5 x EQ2341 Pattern Recognition and Machine Learning 1 7.5 x EQ2341 Pattern Recognition and Machine Learning 1 7.5 x EV2340 Software Defined Networking (SDN) and Network Functions Virtualization (NFV) 1 7.5 x EV2320 Applied Nonlinear Optimization 1 7.5 x EV2425 Applied Nonlinear Optimization 1 7.5 x EV2425 Analysis and Search of Visual Data 1-2 7.5 x			1	7.5			X	X
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DD2423			1		\mathbf{X}			
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EQ2330	_		1	7.5		X		
ID1018			1	7.5		X		
ID1212			1	7.5		X		
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EQ2801 Optimal Filtering 1-2 7.5 x								
	EQ2801	Optimal Filtering	1-2	7.5	X			

 $[\]mbox{``Not for students from Electrical Engineering at KTH.}$

		YEAR	CREDITS	1	2	3	4
EQ2831	Foundations in Digital Com.	1-2	7.5		X		
ME2089	Leadership in Cross-Cultural						
DI	and Industrial Contexts	1-2	6.0		X		
EL2745	Principles of Wireless Sensor Networks	1.0		***			
EN2720	Ethical Hacking	1-2 1-2	7.5 7.5	X			
EP2210	Performance Analysis	1-2	(.9	Λ			
11 2210	of Communication Networks	2	7.5	X			
EP2300	Management of Networks		1.0				
	and Networked Systems	2	7.5	\mathbf{x}			
EQ2415	Machine Learning and Data Sci.	2	7.5	X			
IK2510	Wireless Networks	2	7.5	X			
SF2935	Modern Methods						
DII0.	of Statistical Learning	2	7.5	X			
EH2781	IT Management with Enterprise	0	15.0	***	***		
DD2434	Architecture II, Case Studies Machine Learning, Adv. Course	2 2	15.0 7.5	X	X X		
EP2420	Network Analytics	2	7.5		X		
EP2510	Advanced Networked	4	(•3		Λ		
2010	Systems Security	2	7.5		X		
EQ2443	Project in Information Eng.	2	7.5		X		
EQ2444	Project in Communication Eng.	2	7.5		X		
EQ2445	Project in Multimedia						
	Processing and Analysis	2	7.5		X		
IK2511	Project in Wireless Networks	2	7.5		X		
IK2514	Wireless Infrastructure						
	Deployment & Economics	2	7.5		X		
LS1419	English for Employment	2	7.5		X		
LS1465	Rhetoric - Speaking and	0		***			
LS2429	Writing for Impact Technical Communication in Eng.	2	7.5 7.5	X			
AK1213	Swedish Society, Culture and	4	(.9	Λ			
71111215	Industry in Historical Perspective	2	7.5	X	X		
LS1502	Swedish A1 for Engineers	2	7.5	X	X		
LS2439	English for Writing and		, 0				
	Presenting a Degree Project						
	in Science and Engineering	2	7.5		X		
TRACK: CO	SPECIALISATIONS TRACK: COMMUNICATIONS ENGINEERING MANDATORY						
EQ2300	Digital Signal Processing	1	7.5		X		
EQ2300 EQ2411	Advanced Digital Communication		7.5		Λ	X	
EP2950	Wireless Networks	1	7.5			4.	X
EQ2444	Project in Communication Eng.	2	7.5		X		
RECOMMI							
EQ2831	Foundations in Digital Communications	1-2	7.5		X		
EP2200	Queuing Theory and Teletraffic Systems	1	7.5			X	

		YEAR	CREDITS	1	2	3	4
EQ2845	Information Theory						
F.O. 0	and Source Coding	1	7.5			X	
EQ2871	Cyber-Physical Networking	1	7.5			X	
EI2400	Applied Antenna Theory	1	7.5				X
EQ2840	Information Theory and Channel Coding, Accelerated Program	1	7.5				X
TRACK: IN	FORMATION ENGINEERING						
MANDATO	DRY						
EQ2300	Digital Signal Processing	1	7.5		X		
EQ2401	Adaptive Signal Processing	1	7.5			X	
EQ2341	Pattern Recognition						
	and Machine Learning	1	7.5				X
EQ2443	Project in Information Engineering	g 2	7.5		X		
RECOMMI	ENDED						
EQ2801	Optimal Filtering	1	7.5	X			
EQ2845	Information Theory		. 0				
Ç .5	and Source Coding	1	7.5			X	
EQ2840	Information Theory and Channel						
	Coding, Accelerated Program	1	7.5				X
EQ2415	Machine Learning and Data Science	ce 2	7.5	X			
EQ2801	Optimal Filtering	2	7.5	X			
SF2935	Modern Methods						
	of Statistical Learning	2	7.5	\mathbf{x}			
DD2434	Machine Learning, Adv. Course	2	7.5		X		
TRACK: MULTIMEDIA PROCESSING AND ANALYSIS (MMB) MANDATORY							
EQ2330	Image and Video Processing	1	7.5		X		
EQ2321	Speech and Audio Processing	1	7.5			X	
EQ2341	Pattern Recognition and						
EOo	Machine Learning	1	7.5				X
EQ2445	Project in Multimedia Processing and Analysis	2	7.5		X		
RECOMMI	ENDED						
EQ2425	Analysis and Search of Visual Data	a 1	7.5	X			
EQ2801	Optimal Filtering	1	7.5	X			
DD2423	Image Analysis & Computer Vision	n 1	7.5		X		
EQ2300	Digital Signal Processing	1	7.5		X		
EQ2845	Information Theory						
	and Source Coding	1	7.5			X	
EQ2415	Machine Learning and Data Science		7.5	X			
EQ2425	Analysis and Search of Visual Dat	a 2	7.5	X			
EQ2801	Optimal Filtering	2	7.5	X			

		YEAR	CREDITS	1	2	3	4
TRACK: NETWORKED SYSTEMS							
At least or	ne of the courses EP2520, EP2420 a	nd IK22	13 must be ch	osen f	or the de	gree	·.
MANDATO	ORY						
EP2500	Networked Systems Security	1	7.5		X		
EP2200	Queuing Theory and Teletraffic Systems	1	7.5			X	
EP2950	Wireless Networks	1	7.5			Λ	X
E1 2950	W II cless Networks	1	(.9				Λ
CONDITIO	DNALLY ELECTIVE						
EP2520	Building Networked						
Ü	Systems Security	1	7.5			X	
EP2420	Network Analytics	2	7.5		X		
RECOMM	ENDED						
EN2720	Ethical Hacking	1-2	7.5	X			
EH2770	IT Management with		1.0				
	Enterprise Architecture I	1	7.5				X
IK2220	Software Defined Networking and Network Functions		1.0				71
	Virtualization (NFV)	1	7.5				X
EP2210	Performance Analysis of	-	1.0				A
LI 2210	Communication Networks	2	7.5	X			
EP2300	Management of Networks	2	1.0	25.			
LI 2500	and Networked Systems	2	7.5	X			
EP2510	Advanced Networked	2	(•0	A			
2310	Systems Security	2	7.5		X		
EH2781	IT Management with Enterprise	2	(.9		Λ		
£112701	Architecture II, Case Studies	0	15.0	37	37		
	Architecture II, Case Studies	2	15.0	X	X		