Faculty of Information, Media and Electrical Engineering

Information about the degree program

Communication Systems and Networks
Master of Science

Technology Arts Sciences TH Köln

The ever-increasing interaction of hardware and software solutions and the networking of systems are shaping the economic and technological developments in the computer industry and telecommunications sector. The Communication Systems and Networks degree program offers students the opportunity to grasp and shape the complex interrelationships of modern and future communication systems and services. A special feature of the course is the holistic view of communication systems from the system level to the network level. By choosing between two specialization profiles (Communication Systems and Networks and Security), students have the opportunity to acquire in-depth knowledge and skills in one of these areas, depending on their preferences.

The course of studies is conducted mainly in English. It is therefore also aimed at international students with English language skills.

Vocational Fields
The planning, development and customized adaptation of new communication systems and networks are in the focus of the professional activities. The generally strong demand for communication and information technology services in virtually all sectors of the economy opens up numerous perspectives in many industries. Potential employers are from the mobile radio and telecommunications sector, manufacturers and suppliers of communication technology equipment and facilities, network operators and broadcasters, manufacturers of consumer electronics equipment, mechanical and plant engineering companies, the automotive industry and their suppliers. Job opportunities as a research associate at scientific and public institutions or research facilities including the possibility of gaining a doctorate exist, too.

Expectations towards the Applicants
Students are expected to show a high degree of motivation, commitment, personal responsibility and the ability to work under pressure when designing and implementing their studies.

Study
The master's program is offered by the Institute for Communications Engineering of the Faculty of Information, Media and Electrical Engineering at the TH Köln – University of Applied Sciences in cooperation with the Department of Computer Science of the Bonn-Rhein-Sieg University of Applied Sciences at St. Augustin. It is characterised by a practice-oriented, vocational training.

The modular structure of the program and the evaluation of modules and courses according to the European Credit Transfer System (ECTS) facilitate international student exchange. The course of studies provides a total of 90 ECTS points.

Many of the subjects are taught in English. The application-oriented master's program Communication Systems and Networks is designed for a standard period of study of three semesters including the writing of the master's thesis and leads to the degree Master of Science.

Double Degree
There are currently double degree agreements with Spain and Australia for the master's program CSN, for which students can apply.

Study Requirements
– Bachelor's degree or diploma in a computer science program, a mathematical-natural science or engineering program in the field of information and communication technology with at least 210 ECTS points and a final grade better than 2.3.
– an application procedure is carried out to select the students.
– for degrees with less than 210 ECTS points, the course of study can be taken up by additional work in the form of internships and/or courses.

Beginning of Program
In general the studies begin in the summer semester. However, it is possible to start in the winter semester.

Sem.	Title	ECTS
1	Advanced Mathematics	5
	Fundamentals of System- and Network Theory	5
	Profile modul 1 from profile list	5
	Profile modul 2 from profile list	5
	Elective course 1 (from available master courses with technical content)	5
	Research Project	10
2	Project Management	5
	Profile modul 3 from profile list	5
	Profile modul 4 from profile list	5
	Elective course 2 (see Elective course 1)	5
	Elective course 3 (any master course)	1
3	Thesis	4
	Thesis presentation	5

In-depth Profiles

Profile Modules Communication Systems (4 out of 5)
Advanced Channel Coding
Simulation of Acoustic Environments
Optical and Wireless Transmission Networks
RF System Design
Cryptography
Next Generation Networks
Digital Signal Processing
Deep Machine Learning
Advanced Multimedia Communications

Profile Modules Networks and Security (4 out of 7)
Advanced Multimedia Communications
Communication in Distributed Systems
Reliability of Systems
Routing und Traffic Engineering
Service Management in Networks
Information Security
Cryptography
Virtual Private Networks
Identification and Privacy Enhanced Technologies
Embedded Security
Next Generation Networks

Educational Accreditation

The TH Köln is currently in an ongoing procedure for system accreditation and quality assurance with the accreditation agency AQAS. All degree programs of the faculty are accredited.

Websites

Further information about the degree program and the institute can be found at **www.mcsn.de** ↗ (English version) as well as on the website of the TH Köln at: **www.th-koeln.de/macsn** ↗ (German version)

Student Advisory Service

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